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Reducing the Cost of Foundry Patterns

How Those of Circular Form May Be Quickly and Economically Made Using Plaster of Paris and Plastacine in Place of Wood

BY D. GORDON*

In executing small orders for castings, it is often found that the intrinsic value of the work produced is comparatively small when considered with regard to their ultimate cost. This is due, in the majority of cases, to the pattern charges, which vary according to the work entailed, being thus proportionately greater than the work produced by their means. When the work in hand is of the "hurry up," experimental, or "one off" variety these charges appear to be accentuated, even when stock patterns "something like" are altered, or if by means of a skeleton pattern, the objective in hand can be fulfilled.

With reference to this latter method of producing castings, relative costs between the pattern shop and foundry have to be carefully considered as an inter-departmental saving in one direction may be considerably exceeded in another and it may be accepted that a fully formed pattern is, in every respect, the most efficient for casting production.

Recognizing this fact, a method is dealt with in this article whereby full patterns of a circular form may quickly, efficiently and economically be produced, using plaster of paris as a substitute for wood. The possibilities of this material as a good substitute for general engineering pattern-making are not fully appreciated or recognized, as its uses in this direction are confined chiefly to pattern work of the sanitary engineering variety; but its easy and quick manipulation should make its uses more extensively applicable, especially for patterns of the "hurry up," experimental or "one off" variety.

Its chief defect as a material for patterns is its liability to fracture, but this disadvantage can in many cases be obviated if precautionary methods are taken in the pattern's construction, combined with a full recognition of the molding procedure to be adopted for its duplication in metal. Fig. 1

*The author is lecturer-instructor in foundry and pattern-shop practice in the School of Engineering, High Street, Poplar, London, England. The pattern described represents only one aspect of this little known practice and was made by a student in five hours, it being his first attempt in plaster work.

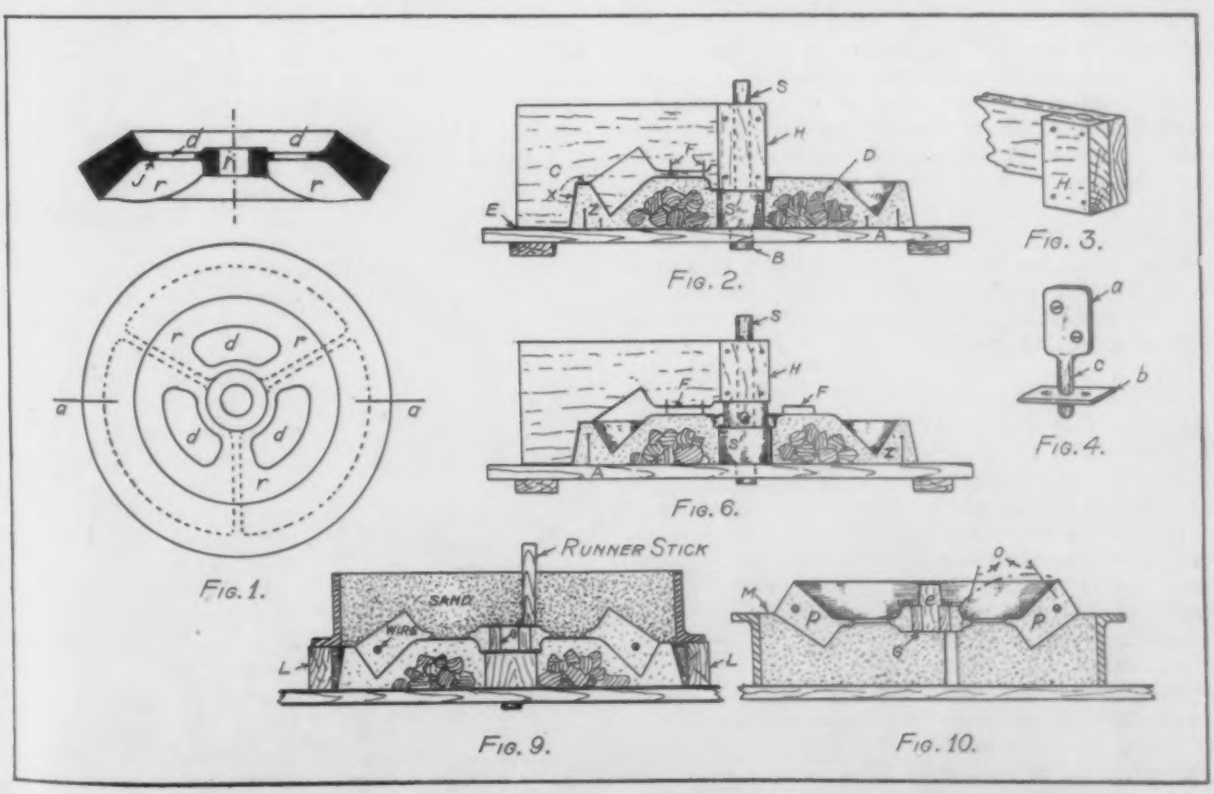


Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 6. Fig. 9. Fig. 10.

The Various Stages in Making a Round Pattern by the Use of Plaster of Paris and Plastacine

shows the plan and sectional elevation, through *a-a*, of a bevel wheel blank, this being chosen as an example explaining the procedure for producing plaster patterns of a circular formation as it embodies the main principles involved, which are applicable to many and various types of circular patterns.

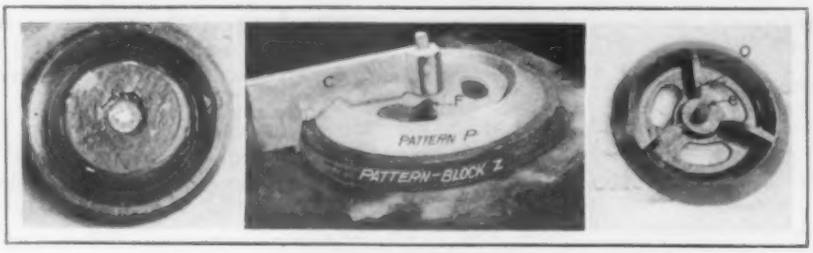


Fig. 5 (left) gives the appearance of the pattern-block after being used in the foundry. Fig 7 (center) shows how the plastacine is removed after the plaster has set. Fig. 8 (right) is a view of the finished pattern, o being the pins

Upon a making-up board A, Fig. 2, the spindle S is projected, this being done by spigoting one end B of the spindle into the board, and the larger diameter S′ of the spindle forming a bearing, in one direction, upon the board. This larger diameter S′ in its length defines the position of a pattern-block striking board C Fig. 2. This striking board is cut out to the one sectional profile of the blank, the lower section containing the greater length of boss being the portion cut away. Extending beyond the greater face diameter of the wheel, a further portion X of the board C is cut away having a well defined taper and which, in its length, extends beyond the lower edge of the wheel.

The complete section of the wheel is marked upon this board as, at a later stage, the board is cut away to this marking, this being more fully understood as the work proceeds. Centrally, the board C is cut out semicircularly, to receive one half of the spindle S and is kept in position with the spindle by means of a block H which is shown in Fig. 3.

This block extends from the boss face, where it bears upon the spindle at S′ to the extreme width of the board C at this position and is fixed to the latter by screws. This fixture should allow the striking board to revolve freely, but truly, around the spindle S and although not the most common method for attaching these striking boards, is frequently adopted, and is given here as an easy method whereby this practice may be tried. The most common method for fixing these boards for revolving around a fixed center is by means of a pin-plate, *a*, Fig. 4, and a socket plate *b*.

This latter is fixed into, or upon, a piece of wood, which fulfills the same conditions as the portion S′ of the spindle, namely, as the bearing for carrying the striking board centrally. The pin-plate *a* is let into the striking board, the face of the plate portion being flush with the board surface, and the pin *c* projects beyond the edge, its center being lineable with the plate face. This pin fits into the socket plate, a center hole in this allowing a free revolving movement.

Within the striking radius of this board as it is revolved, nails are driven into the making-up board A and allowed to project sufficiently to retain, within limits, a coke bed D which is made up around the spindle and about ¾ to 1 in. away from the striking edge of the board C. The making-up board A is rubbed over with oil or tallow at those portions which are contiguous to the bearing surface E of the board C. This oiling is required to prevent any plaster adhering to the board surface at those positions, its action being a parting one. Over the coke bed D, plaster of paris, mixed to the consistency of cream, is poured and the board C revolved sweeping the plaster to the conformity of its edge. To facilitate the sweeping up of the plaster the striking edge of the board C should be well champered, the edge thickness not exceeding ⅛ in. In this respect zinc plate cut to the required striking edge and attached to a supporting board will be found to give a cleaner surface to the plaster and is preferable to wood as a striking edge. The striking up of the plaster should be done as rapidly as possible owing to the quick setting action of this substance and one method adopted to restrain this quick setting is to add a small quantity of lime to the water into which the plaster is mixed. The lime also gives additional strength to the material. Fig. 5 gives a plan view of this struck up plaster pattern-block without the spindle S.

When this pattern-block, as it is termed, has thoroughly set, the positions of the webs *r*, *r*, *r*, Fig. 1 and the lightening holes *d. d. d.* are marked out upon its surface, it being then coated over with shellac varnish, this being required to prevent the plaster absorbing the oil which is rubbed over its surface when the varnish has hard set. Referring to oil, it should not be used excessively as it tends to form blowholes and sharp corners tend to lose their definition, a fine film being all that is necessary to create a parting between one body of plaster and another.

The board C is now re-cut to the other half section profile, Fig. 6, the block H being also cut in proportion as shown. The seating and striking edge X, Fig 2, remain constant, but the board C centrally is kept to its required hight, which is now to the surface of the shallow boss, by means of a collar G which is made loosely over the spindle S and the diameter of this collar is conveniently the diameter of the print required for the boss core I.

To form the holes *d. d. d.*, Fig. 1, plastacine will be found most convenient as, owing to its plasticity, it readily conforms to and retains a given shape. This material is made to the thickness of the wheel plate J, Fig. 1, and of a width sufficient to form from it the holes' shape. To mark out these shapes the material is placed upon the surface of the pattern-block Z at their approximate positions and by means of the striking board the required radii can be obtained.

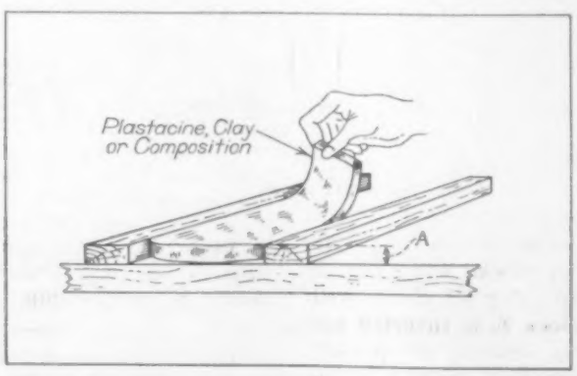


Fig. 11—Method of Kneading Plastacine Between Two Boards to Obtain the Desired Thickness, A, for Lightening Holes

In the transverse direction the board, along its edge, can be utilized for setting out. An easy method for getting plastacine to any desired thickness is to knead it between two wood strips

attached to a board, the thickness of these strips being the required thickness, and their distance apart sufficient to obtain the shape, as shown by Fig. 11. A straight-edge, drawn along the strip surfaces, removes any excess material leaving the desired thickness which is easily removed from the board upon which it has been made up.

The plastacine pieces F, Fig. 6, are attached to the pattern block Z by means of nails, and the re-cut board C is placed into position, the seating edge X taking the bearing of the board outwardly. Plaster is now poured over the pattern-block and swept to shape in a similar manner to that described for making the block. To give additional strength to this, the plaster pattern, it should be reinforced by means of a wire ring bedded into it during the sweeping up period, but before completion.

When the plaster has set, a fairly rapid process, the plastacine F, Fig. 7, is removed and the making-up board A, Figs. 2 and 3, well rapped and jarred, also the pattern block Z is lightly rapped around its circumference. This rapping and jarring loosens the pattern P from the block, being then free for removal. The lightening holes *d, d, d,*

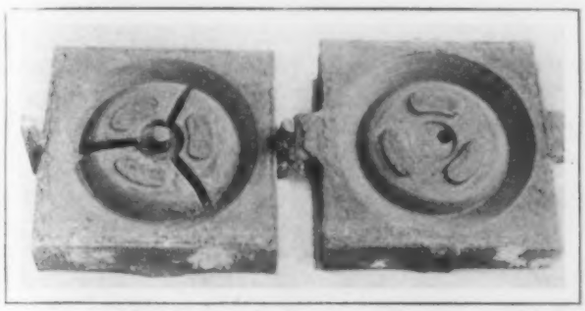


Fig. 12—A Finished Mold Made from the Plaster Pattern

formed by the plastacine, are cleaned up and tapered, it being readily understood that complete definition by this material is unnecessary, as paring tools can be easily and quickly applied for finishing purposes.

The webs *r, r, r,* Fig. 1 are of wood and may be fixed at their respective positions by means of screws passed through the plaster into them. These webs can also be filleted at those positions in contact with the plaster body with leather, wax or plaster, leather being the most suitable. A core print for coring out the boss I is fitted into the collar G, Fig. 6, which remains in the plaster pattern, the fitment being as shown at *e*, Fig. 10.

The pattern is now body varnished and treated in every respect the same as for the more conventional wood pattern, being, although still in its "green" state, ready for molding, Fig. 8. Owing to their fracturing possibilities plaster patterns of low sectional thickness are preferably molded up on their pattern blocks, and if for example, we assume that the center plate of this wheel is easily liable to fracture when rammed up in the mold, it would be molded upon its pattern block Z in the following manner:

The plaster pattern, without the webs *r, r, r,* is placed into position upon the pattern-block and a molding box placed over the relative position of this box with the pattern being obtained by supporting the box by means of blocks L L, Fig. 9. This box is now rammed up after which it, with the pattern P and pattern block Z, is inverted and the pattern block lifted away, leaving the pattern in the mold, Fig. 10. Around the periphery of the pattern a mold joint, M, is formed and parted over with parting sand. The webs *r, r, r,* are next assembled at their respective positions, this being done by means of pins *o*, Fig. 10, which pass freely, but not loosely, through the webs into the plaster pattern. The top, or cope box, is next placed over and the remaining portion of the pattern rammed up. During this ramming up the pins O are removed when the sand, contiguous to the webs *r, r, r,* has been sufficiently rammed to insure their retaining position. When the top box is lifted away these webs are also lifted with the mold, being afterwards removed as separate units and the necessary fillets cut away by the molder.

It of course will be quite obvious that the webs *r, r, r,* could be fixed to the pattern so that they are not loose pattern pieces, but this would entail cutting away the pattern-block to insure a perfect seating for the main body, and in the example in question the most preferable method from a molding point of view, would be their working off the pattern as loose pieces, their separate removal being more expeditious than a heavy top lift in the mold.

The pattern is next withdrawn from the bottom box, the print *e* taking the rapping jar necessary for relieving it from the sand, Fig. 12 gives the views of the completed mold.

In conclusion, if the pattern should be fractured, its assembly, in two or more pieces, is accurately obtained upon the pattern block so that, fractures notwithstanding, its utility as a pattern for molding purposes is unimpaired.

Proper Selection of Employees

At the meeting of the Newark Foundrymen's Association, Newark, N. J., held June 2, Dr. Henry Satchwell, Newark, N. J., talked on "First Aid," giving practical suggestions for the treatment of injured men. For the reason that nearly every accident is a case for liability against the employer, he emphasized that the greatest economy is by far the proper selection of the employee. In his address he said:

"All workmen should be subjected to medical examination, in order that all hidden defects, either physical or mental, shall be known in advance. Injury by accident to the normal workman is a small factor; by far the greatest loss is from accident to the diseased man. If a sick man is well enough to get work, but is afterward injured, the employer is totally liable; therefore the great importance of selecting labor. It will save more money than all subsequent economies. In foundries where a great part of the work is heavy, ruptures are the bugbear. Heart disease, weak arterial walls and similar deficiencies incapacitate a man for such labor.

"The proper reporting of accidents is a duty that all manufacturers should require. It serves more than one purpose. It gives the employer a chance to check up false claims and to apply the right treatment at the earliest possible moment. Regulations for reporting accidents are almost worthless unless a penalty is attached to the failure to report.

"It has been found that factories that pay well both in wages and in medical treatment have the least trouble. It has been suggested that if the careful inspection of employees should be carried out, a large class of workmen would be unable to find employment. This would call for a legislative remedy, one that would enable a company to hire a man without being liable for disability caused or contributed to by some existing disease of the man."

Vice-President James Flockhart presided at the business meeting, when Edward Maher's Sons were elected to membership.

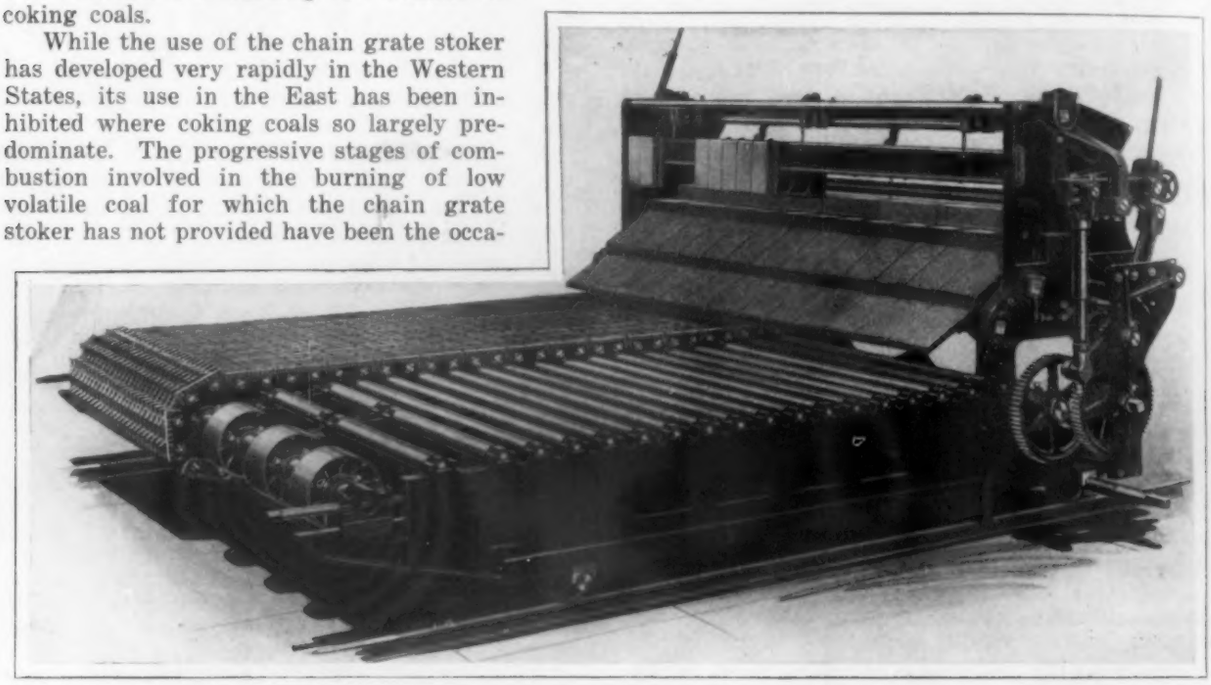
The Niles-Bement-Pond Company, whose line has been handled on the Pacific coast for some years by Harron, Rickard & McCone, will open a branch office in the Monadnock Building, San Francisco.

COKING COAL CHAIN STOKER

Two Combustion Zones and Inclined Coking Plates to Prevent Clinker Formation

Automatic mechanical equipment for the burning of any coal must provide all the features necessary to promote progressive combustion in as many stages as that type of coal requires for successful burning. For this reason, all types of stokers have not always been adapted to the burning of all types of coal. Particularly the chain grate stoker, a type desirable for installation at all times because of its low cost of operation and other natural advantages, has been very successful as applied to the use of free burning, high volatile coals, but has not been suitable for burning low volatile or coking coals.

While the use of the chain grate stoker has developed very rapidly in the Western States, its use in the East has been inhibited where coking coals so largely predominate. The progressive stages of combustion involved in the burning of low volatile coal for which the chain grate stoker has not provided have been the occasion of several years of experimenting by the Green Engineering Company, Chicago, Ill., as the result of which a modified chain grate stoker, suitable for the burning of coking coal has been developed, this stoker being applicable under this classification to all coals whose volatile constituents fuse at a temperature below that of disintegration.



A Chain Grate Stoker Developed for the Burning of Coking Coals

Previous to three years ago, the chain grate was considered inapplicable to the coking coals of the Eastern seaboard, and no attempt was made to place the standard chain grate in any locality which involved the use of coking coals. The characteristics of this fuel and its action when subjected to heat, it is explained, make it impossible to ignite, coke and consume it uniformly unless it is treated by auxiliary means to an extent which the standard chain grate does not and cannot provide. An increase in the draft only serves to accentuate the difficulties which are found to be present in such cases, causing holes to develop in the fuel, permitting a marked short-circuiting of the gases through these holes, and seriously diluting the furnace gases. Even though the fuel can be successfully ignited, it has the tendency to draw together into masses or cakes which eventually become solid masses of coke burning only on the surface. These masses of coke will then continue almost indefinitely as such and either form an undesirable accumulation at the bridgewall or pass into the ash pit unconsumed.

In addition to this unavoidable characteristic of this fuel, it forms a practically impervious layer near the front of the stoker and does not permit of the passage of air under the influence of the furnace draft. It is, therefore, difficult to ignite if undisturbed, and almost equally difficult to burn out even if the ignition is successful and the draft adequate to furnish oxygen.

The Eastern coals do not, as a rule, carry much ash, but the intensity of the fire which results from the combustion of clean coal is such that the ash it does contain readily melts in the furnace, and those types of stokers which disturb the general formation of the fuel bed, produce clinkers by the fusing of the ash. There is but one proper method of burning bituminous coal, and that is to allow it to remain quiet during the latter stages of combustion. Ash is naturally formed first at the grate surface, where the oxygen supply is greatest and where the combustion is, therefore, earliest completed. An inversion of the fuel bed brings this ash layer to the surface with the incandescent carbon below, and a fluxing of the ash is inevitable. There is no getting away from the fact that this action is objectionable to an extreme degree, it being the primary cause of both the brick and metal deterioration in the furnace and stoker which inverts or mixes the fuel.

The L type chain grate stoker of the Green Engineering Company provides for two distinct zones in the combustion process; the first being for the distillation and ignition of the combustible volatiles and the second for the combustion of fixed carbon. The inclined coking plates, over which the fuel flows in its descent from the hopper to the chain grate surface are agitated to a sufficient extent so that the fuel particles are in constant motion relative to one another, and the binding substance which exudes from the particles of coal is not permitted to set so as to cement such particles together. The length of the incline and the extent of its agitation are relied upon to provide for the complete distillation of the combustible volatiles which precludes further caking of the fuel and produces a resultant fuel bed in the form of uniform coke of a comparatively small size. The frag-

mentary and porous nature of such a fuel bed in turn permits the carrying of unusually thick fires and the almost complete extraction of the oxygen from the entering air.

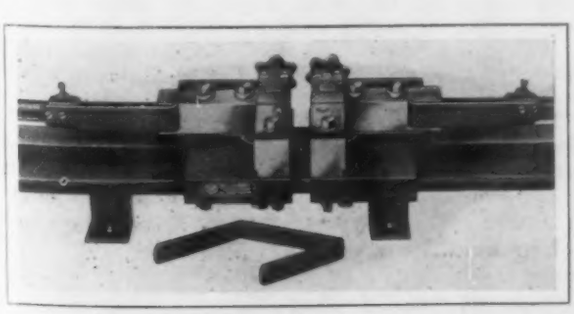
Many recent installations of this type of stoker have been made. One of these is at the plant of the Duquesne Light, Heat & Power Company, Pittsburgh, Pa. This consists of 20 stokers of 822 hp. each fitted to Sterling boilers having a furnace width of 15 ft. The stokers are 14 ft. wide, 12 ft. long and have a grate area of 160 sq. ft. Natural draft is used for light loads and forced draft when the demand on the boilers increases. Each of the boilers is equipped for individual coal weighing and has flow heaters and double draft gauges in the ash pit, furnace and uptake. The characteristic operating feature of these stokers is the simplicity of adjustments to meet varying loads. Increased load is met simply by opening the damper to obtain more draft and increasing the stoker feed to obtain more coal. These adjustments are simple and one fireman can handle six to eight stokers. As the front portion of the fuel bed is raised to make an angle with the rear section, the ignition is intense and the capacity limit of the stokers is simply the limit of the draft to burn the fuel. Ratings in excess of 200 per cent. are reached in daily practice.

Double-Lever Machine for Bending Bars

For making a right and a left hand bend without resetting the bending device or removing the stock, the Wallace Supplies Mfg. Company, 412 Orleans street, Chicago, Ill., has developed a double-lever bar bending machine. It is also possible to make obtuse-angle bends with the machine. Another feature is the use of hand screws for clamping the stock after it is placed in position, an arrangement which is relied upon to prevent any slippage.

The machine practically embraces what might be termed a right hand and a left hand bending machine mounted on a long base with means for adjustment so that any distance between the bends above 4 in. can be secured. The machine is designed to be mounted on a work bench to which it is secured by lag screws or machine bolts. Angle iron is employed for the supporting rails which can be made of any desired length to cover the range of work that is to be done. The bedplates are of cast iron and the dies are of tool steel, machinery steel being employed for the other parts.

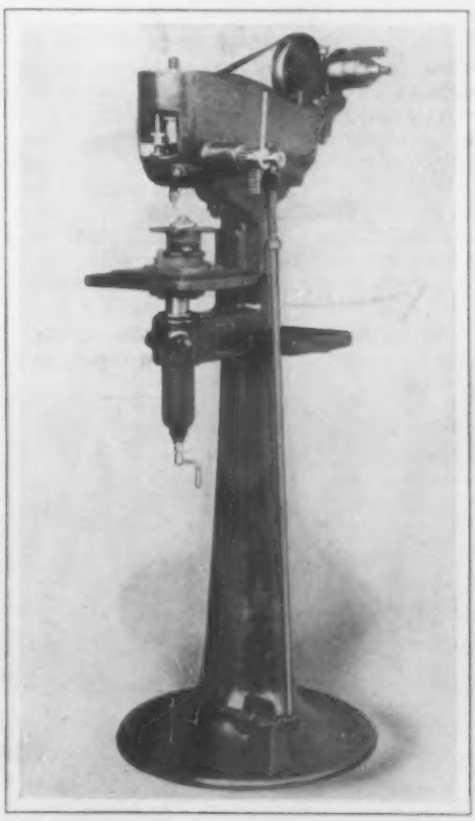
A sample bend is shown and in addition to the regular dies for bending round, square or flat bars, it is possible to fit the machine with dies for bending flat stock edgewise, for bending angle iron and dies which have the corners rounded off so that the bends may be without a sharp corner at the point of bending and of practically any desired radius.



A Double-Lever Machine for Making U Bends in Flat Bar Stock

Vertical Milling Machine for Shrapnel

A special high-speed vertical-spindle milling machine or tool suitable for high-speed drilling has been developed by the George Gorton Machine Company, Racine, Wis. It was designed especially to meet the requirements of a firm having a contract for milling the powder groove in the timing disks used on shrapnel shells. The table has a special fixture with a quick-clamping device for holding the disk and for locating the dimensions



A High-Speed Vertical-Spindle Milling Machine Used in Connection with the Manufacture of Shrapnel for Milling the Powder Groove in the Timing Disks

outside of the groove. The capacity of the machine is approximately 1200 disks per 10-hr. day with an inexperienced operator.

The machine is equipped with ball bearings throughout and the spindle is driven by a belt 1 in. wide provided with an adjustment on the small countershaft at the rear for keeping the tension at the proper degree. The spindle is of hardened and ground tool steel and has a movement of 2 in. for doing this special work. A foot treadle is employed to move the spindle, but by sliding the pinion of this mechanism out of mesh with the rack hand control of the spindle travel is secured.

The table, which has an oil groove surrounding it, is 8 in. square and has a vertical adjustment of 4 in. The maximum distance between the cutter point and the top of the table is 8 in. Motor drive can be employed if desired, the motor being placed on the machine underneath the shelf as illustrated. The net weight of the machine is 650 lb.

The Leece-Neville Company, Cleveland, Ohio, maker of automobile lighting and starting outfits, has purchased the old plant of the Parish & Bingham Company on Hamilton avenue, into which it will move shortly from its present quarters in the Whitney Power Block. It has secured a two-story building having 110,000 sq. ft. of floor space.

Modern Merchant Rolling Mills*

A Historical Presentation of Their Development—How Specialization Has Effected Economies—The Mechanical Cooling Bed—Some Recent Improvements

BY JEROME R. GEORGE

A well-known writer has recently stated that the rolling mill is the key to all industrial development—that it is perhaps the greatest mechanical factor in the civilization of the present day. The most important and the most interesting of all rolling mills is the so-called merchant mill. In fact the history of all mills for rolling metal shapes other than flats commences with and is embraced in the subject of merchant mills.

The first mill with grooved rolls, designed by Henry Cort, in Fontley, England, was what we to-day would call a merchant mill. For some years after the invention of the Cort mill there were no specialty mills, and all rolling mills produced a variety of sections and materials commensurate with the strength of the roll trains and the demands of the trade.

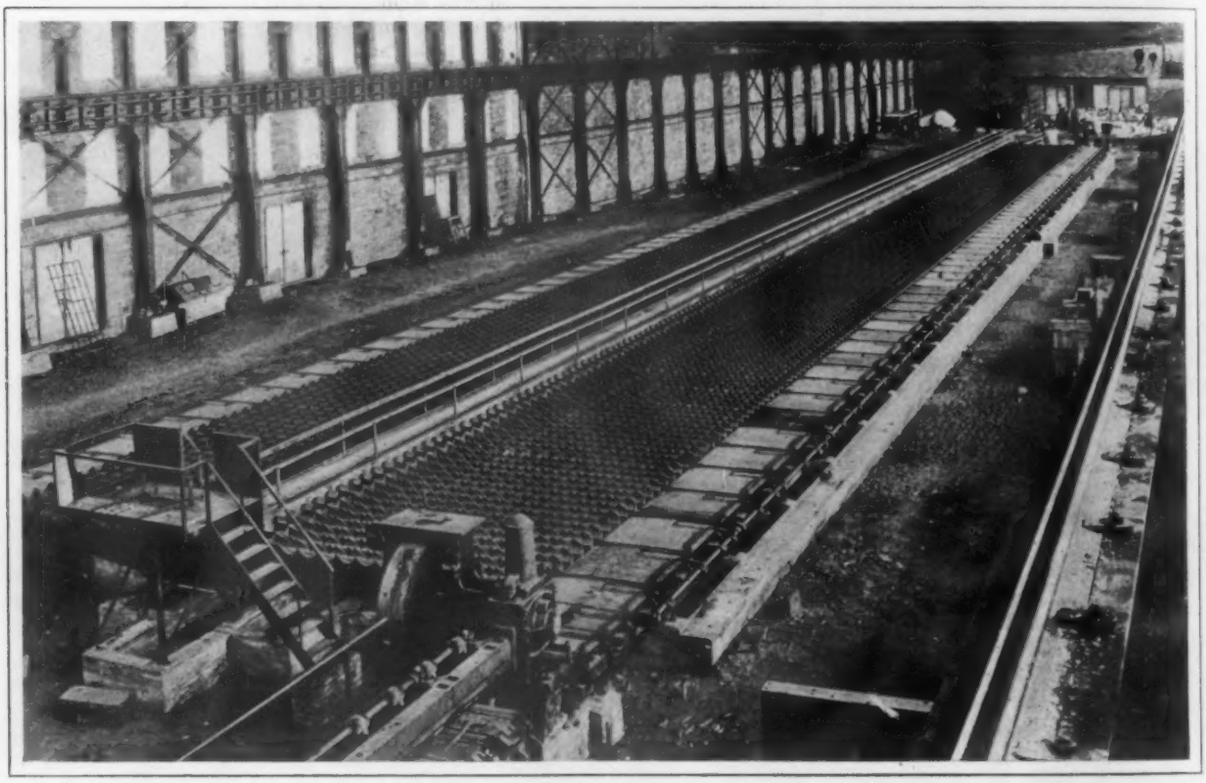


Fig. 1—A Type of Notched Bed of Moderate Length in a Merchant Rolling Mill, the Roll Train in the Background Being Scarcely Visible

Rails, wire rods, beams, hoops, skelp and many other sections now produced on specialty mills were first developed and rolled on merchant mills, and as a rule the merchant mill is still turning out large quantities of all the above-mentioned shapes in addition to a multitude of other old and new forms:

WHAT IS A MERCHANT MILL

It is perhaps natural that a general-purpose mill should be rather loosely named. The use of the word "merchant" undoubtedly was first applied to those mills which rolled certain simple sections for stock, and retailed them out later cut to length as ordered. The word is not entirely appropriate as applied to present-day mills rolling a variety of section and always to order. In this country, however, a merchant mill is any mill which produces regularly more than one shape, and the word "merchant" is so used by the writer. In England a merchant mill is known as a rod mill. In this country many merchant mills are called bar mills.

The writer has in mind a plant in the Middle West where there are two rolling mills side by side. One mill has a 10-in. train of rolls and the other a 14-in. train. The former is called a merchant mill and the latter a bar mill. At another works not far from the border of this State (New York) there is a 10-in. mill which is known throughout the works and on the company books as "The Steel Mill." All of these mills with different local names roll the same shapes, but different sizes and weights, depending upon the strength of the rolls.

The present normal annual production of the principal rolled-steel products in the United States is shown in the table.

Thirty-two per cent. of all the steel rolled in the United States is the product of merchant mills, and this proportion would probably hold throughout the world.

With wider and larger markets many shapes now rolled on merchant mills will undoubtedly be produced on mills especially laid down for the purpose; but it is probable that the merchant mill will never-

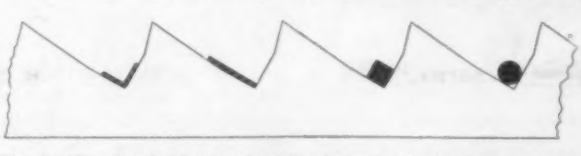


Fig. 2—The Rack Notch of a Merchant Mill. It Presents Two Surfaces at 90 Deg. Opposed to Gravity

*A paper presented at the eighth general meeting of the American Iron and Steel Institute in New York, May 28, 1915. The author is chief engineer, Morgan Construction Company, Worcester, Mass.

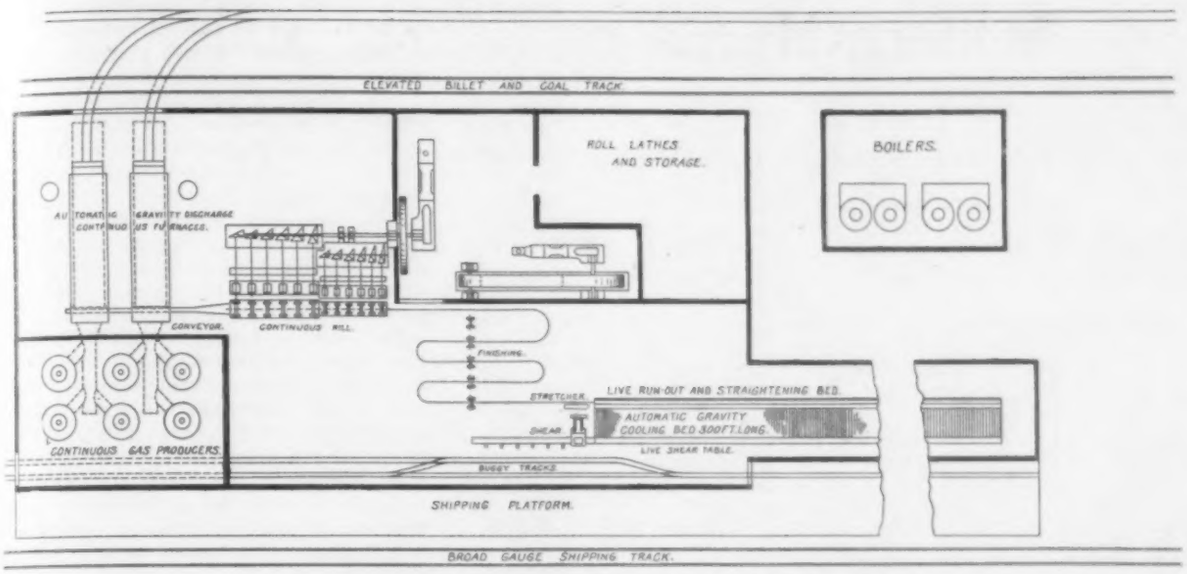


Fig. 3—A Merchant Rolling Mill with Continuous Roughing Trains
Composite plan of four early semi-continuous mills.

theless retain its relative importance as a large producer and continue its important duty of working up business for special mills.

Table Showing the Normal Annual Production of the Principal Rolled Steel Products in the United States

		Gross tons
Rails	Rolled on specialty mills	3½ million
Plates	Rolled on specialty mills	3 million
Sheets	Rolled on specialty mills	3 million
Wire rods	Rolled on specialty mills	2½ million
Structural shapes	Rolled on specialty mills	2½ million
Skelp	Rolled on specialty mills	1 million
Miscellaneous	Rolled on specialty mills	1 million
Merchant mill products		8 million
Total		24½

The United States for some years has held a leading position in the steel business, and in the writer's opinion this has been due in large measure to the early recognition of the economic benefits of highly developed specialized rolling mills. If we are to have an open market and at the same time continue to pay higher wages than our competitors we must pursue this policy even more vigorously in the future. This does not mean, however, that we can afford to neglect the merchant mill in the slightest degree, because, as stated above, it is the main root of the rolling-mill business.

The use of rounds chiefly for bolts and rivets has increased to such an extent that for some years past a number of rolling mills have been employed almost exclusively in the production of round sections. The writer suggests it would be proper and beneficial to give up the name "merchant" as applied to these mills and call them round mills. There is always a benefit in understanding and expressing clearly what we are really doing.

Steel bars for reinforcing concrete, used extensively abroad for years and now increasing in use in this country at the rate of about 16 per cent. per annum, consti-

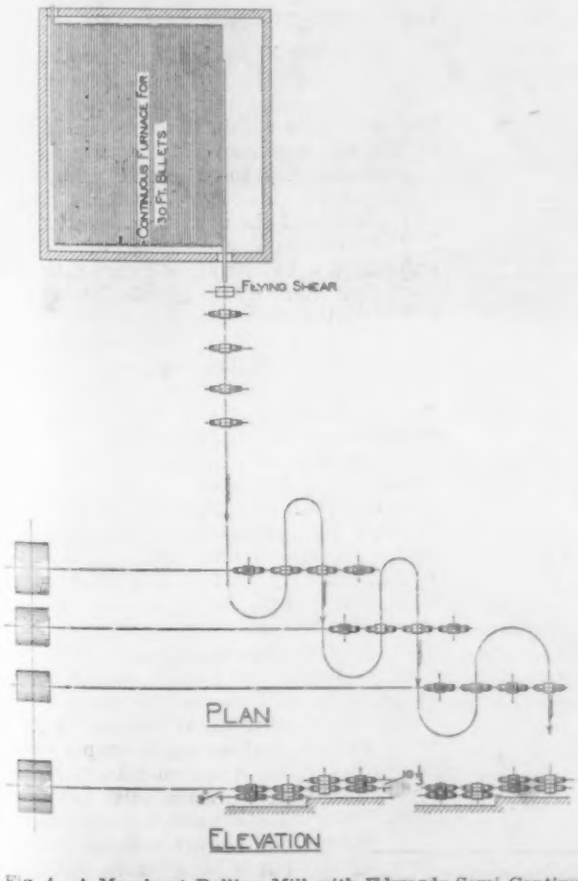


Fig. 4—A Merchant Rolling Mill with Edwards Semi-Continuous Finishing Trains with a Furnace for 30-Ft. Billets

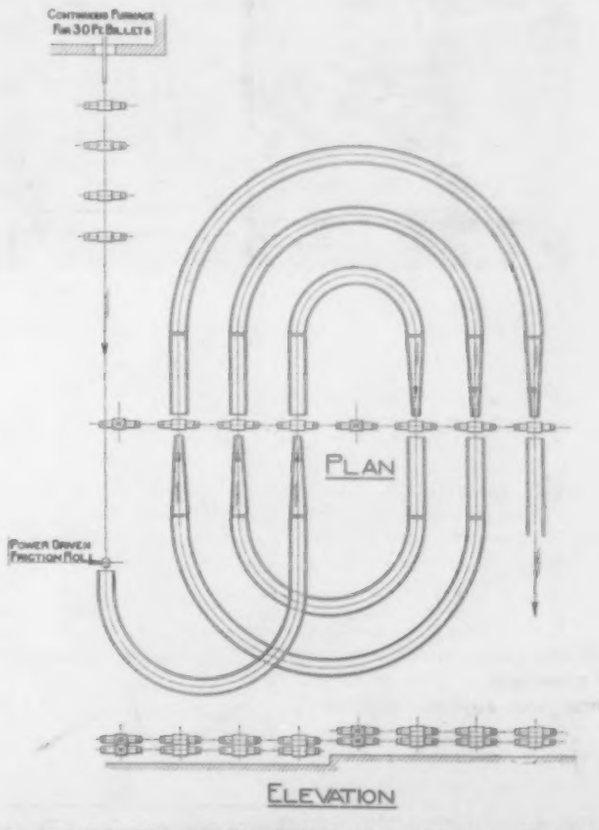
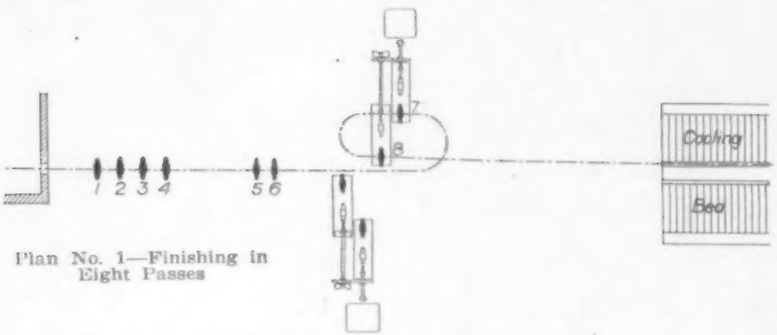
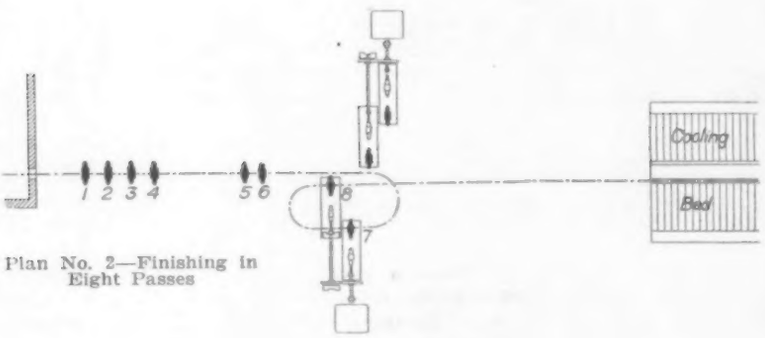


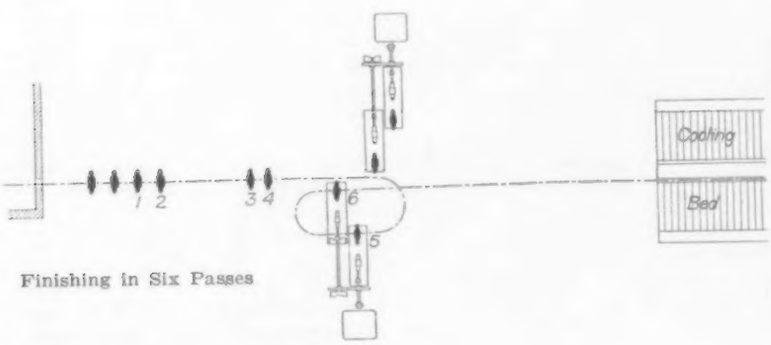
Fig. 5.—A Merchant Rolling Mill for Heavy Sections. Finishing Train Equipped Throughout with Automatic Repeaters



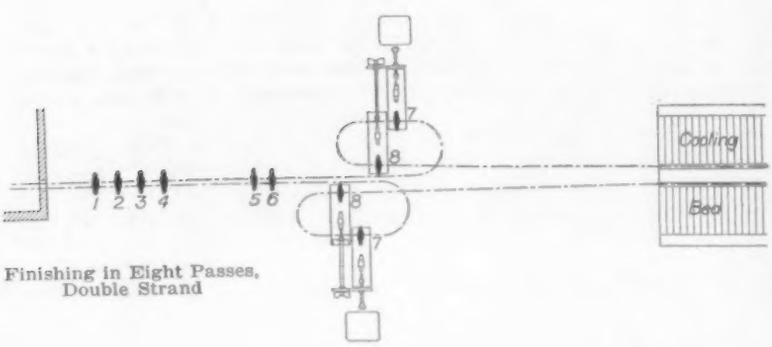
Plan No. 1—Finishing in Eight Passes



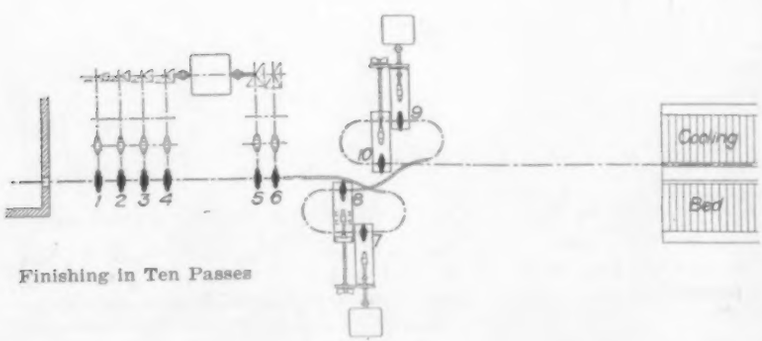
Plan No. 2—Finishing in Eight Passes



Finishing in Six Passes



Finishing in Eight Passes, Double Strand



Finishing in Ten Passes

Fig. 6—Units of a Merchant Rolling Mill with Spare Finishing Trains and Arrangement for Rolling Two Strands of Small Size Bars

tute a rolled product not requiring the usual accuracy of section and should be rolled at extremely low cost on special mills.

The pressing demand for greater accuracy of section and temper makes it very desirable to segregate the different classes of work in order, first, that this accurate rolling may be assured, and, second, that the general cost of rolling may be kept down. Just at the present time there is a marked increase in the demand of users of merchant bars for sections rolled more accurately to size, with better surfaces, and particularly in straighter lengths, and this improvement in quality and additional expense to the mill is not accompanied by any corresponding tendency to higher prices.

All the present mechanical means in sight for improving the quality of merchant bars along the above lines involve the use of special auxiliary equipment, which, if installed, should be kept in constant use; and this is a further reason for classifying and segregating merchant-mill work as fast as permissible.

Ordinarily, when a special mill is laid down for the purpose of operating exclusively on a product previously rolled on a general merchant mill the investment per ton of product is cut from 33⅓ to 50 per cent., and the cost of labor is reduced from 50 to 65 per cent. Notable examples are to be found in comparatively recent installations for rolling angles and skelp.

Largely on account of favorable labor conditions in Europe very few specialty mills have been laid down there, although Germany recently made a beginning along this line by contracting for a few mills of American make. Extraordinary development in highly organized mills in Germany can be looked for upon the restoration of normal business conditions.

ECONOMIES THROUGH SPECIALIZATION

The writer hopes he has been able to point out that along the line of specialization economies may be accomplished that do not lie within the province of the rolling-mill engineer. This is a question of general policy, to be determined by the management. Another important point in the hands of the operating department is the systematic scheduling of rolling orders. Up to within a comparatively short time much of the dissatisfaction incident to the merchant-mill business resulted from a lack of understanding of the operating difficulties with which these mills have had to contend. The satisfaction of the operator and the customer is dependent upon the infrequency of roll changing, and the importance of this can hardly be exaggerated. A rolling cycle covering the full range of sections in three or four weeks seems to give the best satisfaction all around.

An ordinary rail mill rolling rails from 25 to 100 lb. per yd. covers a range of weights of only 1 to 4, whereas the most favored merchant mill covers a range of weights of 1 to 10, the ordinary mill a range of 1 to 20, and many merchant mills a range of weights of 1 to 60. If, in addition to meeting these extreme conditions, a roller is asked to roll rounds, squares, nut iron, ovals, flats, angles, rails, beams, channels and a multitude of other shapes, and change without notice from one section to another to suit the demands of the sales department and the

customer the result is sure to be dissatisfaction all along the line.

For almost a century the merchant mill retained its original simplicity and the minor changes and improvements adopted were confined almost wholly to the roll trains. Billets were charged, drawn and fed to the mill by hand. The finished product was rolled in short lengths so that it could be manipulated on the cooling floor by hand.

In the past 20 years all this has changed, and the roll trains of modern mills are almost lost in the mass of mechanical equipment designed to convey the metal to and from the rolls. The cost of a modern notched cooling bed

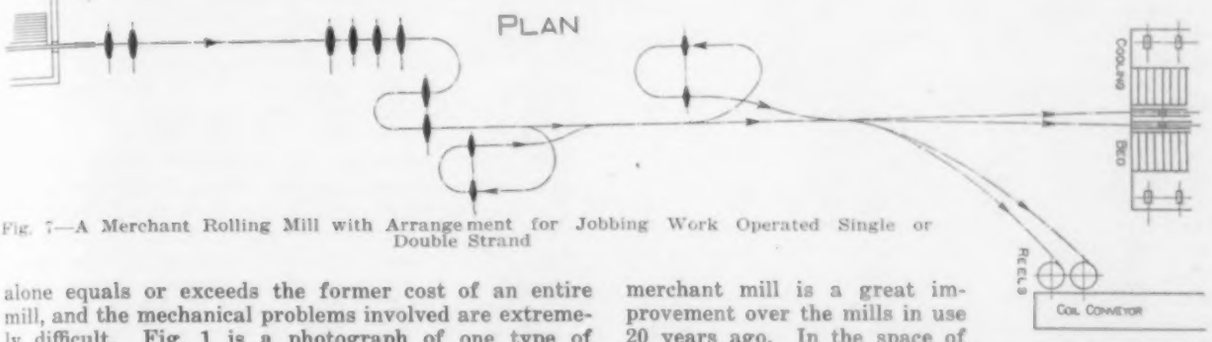


Fig. 7—A Merchant Rolling Mill with Arrangement for Jobbing Work Operated Single or Double Strand

alone equals or exceeds the former cost of an entire mill, and the mechanical problems involved are extremely difficult. Fig. 1 is a photograph of one type of notched bed of moderate length with the roll train in the background scarcely visible.

THE MECHANICAL COOLING BED

The writer does not believe it proper to go extensively into the many intricate details of modern merchant mills, but brief reference to the mechanical bed should be of interest. The principal feature lies in the rack notch, which presents two surfaces at 90 degrees opposed to gravity, as shown by Fig. 2. The beds consist of live roll conveyors for receiving the stock as delivered from the mill at a speed in some cases up to about 25 ft. per second, and with less than 1 second clearance between bars; means for accurately stopping the stock without injury, and transferring it to the cooling racks; notched racks close enough together to support the lightest material rolled, and so designed that the stock is automatically advanced across the bed; a receiving and assembling table at the end of the racks with means for transferring the assembled bars to the front shear table. All the various operations are performed by electric power. Notwithstanding the fact that these machines are constantly subjected to scale and varying degrees of heat they have been developed to such a point of mechanical perfection that the cost of operation and maintenance is practically negligible. It will be of interest to learn that one double bed installed in a 10-in. merchant mill, and reduced to the smallest practicable number of parts, contained in all 96,225 pieces exclusive of the motor parts.

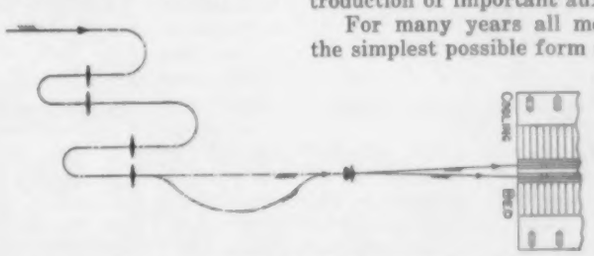


Fig. 8—A Merchant Rolling Mill with Supplemental Sizing Train

Certain types of merchant mills producing a limited range of flats, large rounds, etc., do not have and do not require the notched type of bed; but practically all modern merchant mills are now equipped with some form of mechanical cooling bed. The large tonnage and superior quality of material, as well as the low cost of production which obtains in modern merchant mills, could not be approached, particularly in small mills, without the long mechanical bed with notched racks.

A most fascinating feature of these long beds, which are made at present in lengths up to 500 ft., is presented in the opportunity to observe the peculiar effect of molecular changes incident to the cooling of the hot bars. After the bars reach the bed they first contract, then expand several inches, and then finally contract several feet. The movement of the ends of the long bars as they travel first in one direction and then in another is surprisingly rapid.

ECONOMIES THROUGH IMPROVED MACHINERY

Although the modern merchant mill represents a large investment of capital the cost per ton of product is no greater than the cost of the lowest type of hand mill laid down under equal conditions. The writer's experience has been that all kinds of merchant mills cost from $5 to $6.50 per ton of product per annum, this investment covering everything necessary to equip and start the mill excepting the land.

Aside from some sacrifice in flexibility the modern merchant mill is a great improvement over the mills in use 20 years ago. In the space of time mentioned the tons produced per man has been increased 400 to 500 per cent., and all the work made infinitely easier and safer. The loss in crops and shorts has been reduced 75 per cent. The cost of heating has been reduced 50 per cent., and the total cost of putting billets into finish bars has been reduced on the average from 50 per cent. to 60 per cent. The above-mentioned ecoonmies have been accomplished in the face of new and more exacting requirements as to accuracy of gauge, straightness and temper. The ring and limit gauge and the autocratic inspector were little known in the merchant mills of 20 years ago.

The United States can claim all the credit for the entire development of merchant mills during the last 20 or 25 years. Whether or not we can retain our leadership in this work will depend almost entirely upon the restoration of favorable business conditions under which funds will again be available for expansion and development.

Concerning the technical development of the merchant mill volumes could be written if one ventured into the field of details. The writer will, however, endeavor to present in brief outline the most important steps relating to changes in arrangement of rolls and the introduction of important auxiliary equipment.

For many years all merchant bars were rolled on the simplest possible form of mill, namely, the two-high train. The bars were given a reduction by passing between the rolls and returned over the top roll for the next succeeding pass. The length finished was usually about 16 to 20 ft. Only the simplest forms of guides were used. Then, as now, the most common sections rolled were rounds, and these were made quite true and accurate by first rolling a round bar slightly above the desired area and then passing it through a final finishing groove several times, the roller holding the bar with tongs and turning it 45 to 90 deg. between each pass until the desired roundness was obtained.

ECONOMIES THROUGH MORE EFFICIENT OPERATION

The three-high train was designed to avoid the idle pass over the top roll, and soon replaced the two-high mills and brought about a considerable economy of labor. The number of stands of rolls was increased with the object of enlarging the size of billets and decreasing the number of passes per stand.

Since the tonnage was still limited by the time re-

quired to pass the bar several times through the single finishing groove, it was necessary to progress that some means be found to make a round in one pass in the finishing groove. It was finally discovered that if an oval section of certain proportions was held up by metal guides on the receiving side of the finishing rolls good commercial rounds could be made in one pass. This really great discovery introduced the "guide" mill of today. The finishing of long lengths commenced at this point of development.

In order to get more tonnage on the smaller mills it was necessary to run the rolls at a greater speed, and the speed was gradually increased up to the point where trouble was experienced in the roughing end of the train because of the rolls not "taking" the billet. To overcome this trouble the first roughing roll was set up independently of the finishing train and run at a lower speed.

The next step forward in the production of light sections came from a new method of working the bars in the finishing train. The early method was to allow the bar to run out on the floor and pick up the last end and enter it into the next pass. It was found that a man could catch the first end in a pair of tongs and turn it back into the next pass, forming a loop which overfed onto the floor. As it was easier to turn in the bar from one roll to another than into another pass in the same roll, the alternate two-high mill came into use at this stage. The alternate two-high mill later reached its greatest point of usefulness in the Garrett type of rod mills. Overfeed in the loop was slightly reduced by stepping up the roll diameters as the section was reduced.

A condition was soon brought about where the production was again limited by the hand-fed roughing train. Up to this time no mechanical appliance of any nature excepting the hook and tongs had been employed about the roughing or finishing trains. About this time the steel business in this country experienced a severe and prolonged depression combined with labor troubles, and this led to the installation of a continuous roughing train in the hope of eliminating the troublesome and expensive crew of roughers on the hand mill. This is shown in Fig. 3.

Notwithstanding prejudice and some bad details of construction, the continuous roughing train proved a commercial success for general merchant mill work. Continuous roughing trains were soon added to many existing merchant mills and to the Garrett wire rod mills.

The usual number of men, known as roughers, employed about a stand of hand roughing rolls amounted to 12 in 24 hours, and in 1900, working under 140 card Amalgamated scale, the men averaged to earn $3.60 for eight hours on the smallest tonnage mills. The continuous mill displaced nine of these men and in most cases increased the output of the mill 50 per cent.

At about this period the continuous heating furnace was improved at the delivery end by the gravity end discharge, and this type of furnace came into general and permanent use for all kinds of merchant work. The notched mechanical cooling bed of greatly increased length was introduced about the same time as the continuous roughing train, and the length of finished bars increased from three to four times.

It was a simple matter to speed up a continuous roughing train to overfeed the finishing pass, and so the output of the mill was again limited at the finishing train. Some considerable improvement in tonnage and yield was in sight, providing bars could be finished in longer lengths and the cooling bed no longer presented any obstacles. The problem of further improvement, therefore, resolved itself into a question of uniform heat treatment throughout the length of the finished bars. This was partially solved by an arrangement of rolls in the finishing train as shown in Fig. 4. The principal feature of this arrangement is that the peripheral speed of each roll is enough less than the speed of the one following to hold back the metal so that much of it lies in the furnace instead of upon the mill floor.

The problem was completely solved by the use of 30-ft. small billets heated in a furnace placed close by and immediately in front of the first stand of rolls. With this arrangement of furnace and finishing rolls, the time of exposure from furnace to finishing pass is substantially the same for both ends of the bar regardless of the length finished. The short distance between furnace and mill was made possible by the use of a flying shear. The novel arrangement of roll and pinion housings retained all the advantages of the alternate two-high construction and none of its inherent disadvantages. Mills of this type produce regularly 10,000 tons per month, and on a good day's run will turn out 750 gross tons of ¾-in. rounds.

Another type of mill for heavier sections is shown in Fig. 5. This mill is used for producing sections too stiff to be turned in by hand and is entirely automatic in operation. Note the entire absence of roller tables and mechanical transfers. The first successful employment of mechanical repeaters on both sides of a merchant mill train was made in a mill of this type. One of these mills produces more than 150,000 tons of bars per year.

For rolling heavier merchant sections there are several types of improved mills, notably the three-high mill with traveling roller tables, and the Slick cross-country mill with stationary roller tables. These mills permit of the maximum flexibility and produce large tonnages. The tendency of the times, however, is to revert to the two-high construction of the original Cort mill for all kinds of rolling, on account of its simplicity and great stiffness.

SOME RECENT IMPROVEMENTS

From the beginning two fundamental difficulties have obtained in all general merchant mills, due to the wide range of sections required to be rolled on a given mill, and the problem for the future to solve is the elimination of these difficulties, which are as follows:

Lost time during roll changes.

Extreme variation in output from light to heavy sections.

Spare finishing trains seem to be the remedy for the first. Speed changes can be employed to only a limited extent to correct the second trouble, and therefore it seems necessary to increase or decrease the number of strands rolled in inverse proportion to the weight of bar to be rolled. For 8-in., 9-in. and 10-in. mill work the arrangement of rolls shown in Figs. 6 and 7 seems to offer a simple solution of both of these difficulties.

Improvement in mill construction, together with the perfection of the art of roll design and guide design, has made possible the production of sections of almost unbelievable accuracy; but the insistent demand of many buyers of steel for extreme exactness of round sections has made it necessary to provide means for rolling hot rounds with almost the accuracy of cold-drawn bars.

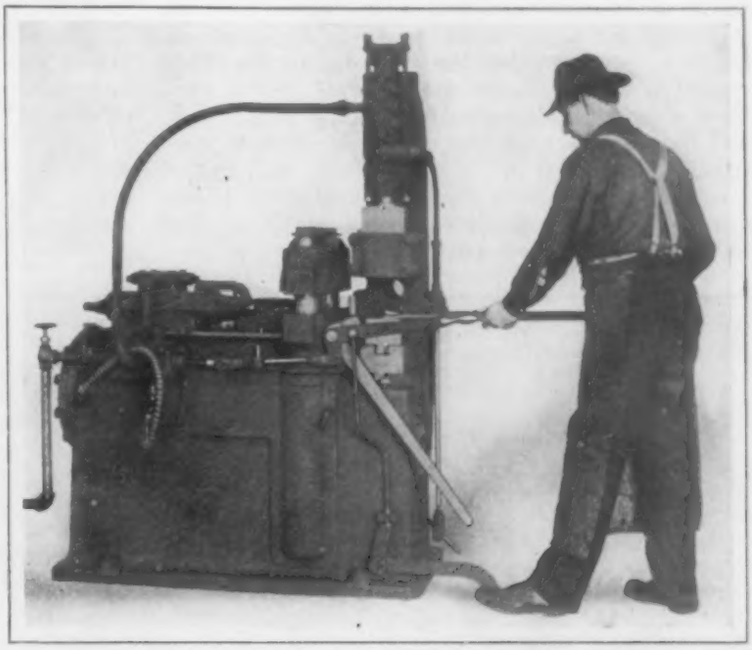
To meet this new requirement of the steel trade a special mill has been evolved with which the general trade may not be familiar, although it has been in successful operation for some months. This new mill, curiously enough, works upon the same principle as employed in the original merchant mill for securing an accurate and true round, but, of course, without reverting to hand labor. Two pairs of rolls set at 90 deg. to each other are mounted so close together in a common housing that the leading pair performs the function of the man with the tongs on the old two-high hand mill. As in the old-time mill, a round bar slightly larger in area than the finished bar is first made in the regular way and then passed through the sizing mill, which is located between the regular finishing train and the cooling bed shown in Fig. 8. The usual best rolling practice of plus or minus about seven-one-thousandths of an inch in diameter has by this machine been reduced 50 per cent.

The Berlin Machine Works, operating a plant at Beloit, Wis., and a branch in Canada, has refused shrapnel orders which would have taken two years to fill. A report has been current that it had booked large orders but the president of the company says that he does not favor such business.

Hammer Drill Bit Sharpening Machine

The Sullivan Machinery Company, Chicago, has brought out a new machine for making and sharpening drill bits. All the operations are performed by compressed air, including that of holding the steel while it is being upset. An important feature of the machine is that all the work is performed by hammering, which is relied upon to give the steel a fine grain, toughness and ability to resist wear and shock.

The machine consists of a heavy rectangular frame supporting the horizontal or upsetting hammer and an upright standard located at the end of the frame carries the vertical or forming hammer. The air-operated vise in which the steel is held is located in front of the horizontal hammer and consists of two massive yokes at the top and bottom connected by two heavy steel columns. The upper yoke and the anvil or seat below it are recessed to receive the steel clamping dies. An air cylinder in the rear end of the frame 12 in. in diameter operates the vise and in closing the air forces the piston forward, carrying ahead of it a crosshead block to which is pinned one end of a link or toggle. The other end of the link is fastened to the lower vise yoke which is thus driven down carrying the upper yoke with it and closing the dies. The action resembles that of a knuckle joint and with air at 100-lb. pressure a clamping force of over 100,000 lb. is provided. Admitting air to the front of the piston causes the crosshead to travel back and the vise opens as the link and lower yoke are pulled up.



A Machine of the Hammer Type for Making and Sharpening Drill Bits, in Which All Operations Are Performed by Compressed Air

The two hammers consist of the cylinders used on rock drilling machines equipped with the builder's spool valve motion. A floating piston and a loose shank or distance piece, upset on the end inside the cylinder to receive the blows of the piston, is provided for the horizontal hammer. The front end is blank to receive a loose dolly. A guide block which carries the upper of two square forming or swaging dies is fitted to the end of the piston rod of the vertical hammer, while the lower die is keyed to a similar anvil or block resting on the frame. Normally the vertical piston and the die are held in a raised position by a spring and pin which are relied upon to hold the valve away from its lower seat, thus maintaining live air pressure in the lower end of the cylinder. A foot treadle operates the vertical hammer, while the vise and horizontal upsetting hammer are controlled by a hand lever.

In making new bits from blank stock, the steel is first heated and placed in the clamping dies which have a flare to permit upsetting to the widest gauge desired. The steel is held in the operator's right hand, while the lever controlling the vise is held in the left. After the vise is shut he presses the lever further, admitting air to the horizontal hammer, a few blows from the dolly upsetting the steel. The lever is then raised, thus stopping the hammer and opening the vise, after which the vertical hammer is started by the foot treadle to flatten out the wings or ears. Two or three alternations between the hammers finish the bit and it is stated that it is possible to make either solid or hollow steel bits in one heat or in 50 to 60 sec.

Practically any kind of drill shank can be made on the machine as well as bits and forging work that is done on a small steam hammer, such as the forging of bolt heads, can also be performed on this machine. When hollow drill bits are being made the hole in the stock becomes closed while the lugs or collar are being upset. To reopen the hole steel pins are driven into the steel shank and are pulled out by the lever hanging below the hand lever controlling the vise. To prevent the vertical hammer from being started while the steel is being upset by the horizontal hammer a positive stop is provided and as an additional precaution the action of the upsetting hammer and vise is timed so that the steel is gripped in the vise before the hammer can start.

Purchase of Coated Sheets on Analysis

The first annual convention of the Ohio Master Sheet Metal Contractors' Association was held at the Beckel Hotel, Dayton, Ohio, June 2 and 3. Over 50 active members were enrolled. Among the resolutions adopted was one favoring the purchase of lead and tin-coated sheets on an analysis basis. The association also pledged its support to the rolling mills in their efforts to better trade practice in every way possible. The offices of the association are the following: president, George E. Snyder, Columbus; vice-president, F. J. Hoesrting, Dayton; secretary, W. D. Weaver, Columbus; treasurer, B. J. Birmingham, Cleveland. The directors are J. J. Dalzell, Youngstown; Geo. T. Thesmacher, Cleveland; John Weigel, Cincinnati; H. H. Fast, Dayton, and M. B. Armstrong, London. The next annual meeting will be held at Cincinnati, at a date to be selected by the president and board of directors.

"Safety first" field day, held at Rickwood Park, Birmingham, May 29, under the auspices of the Alabama Safety Association, the United States Bureau of Mines, the American Red Cross Society and the Alabama Coal and Metal Operators' Association, was featured by demonstrations of first aid work of many kinds. Teams of men, boys and women took part in the competition for prizes, with special prizes for negro teams. The grand prize, a silver loving cup donated by the Alabama Safety First Association, was won by team No. 24 of the Republic Iron & Steel Company. Nearly 300 people took part in the contests.

Storage Battery Truck for Factory Use

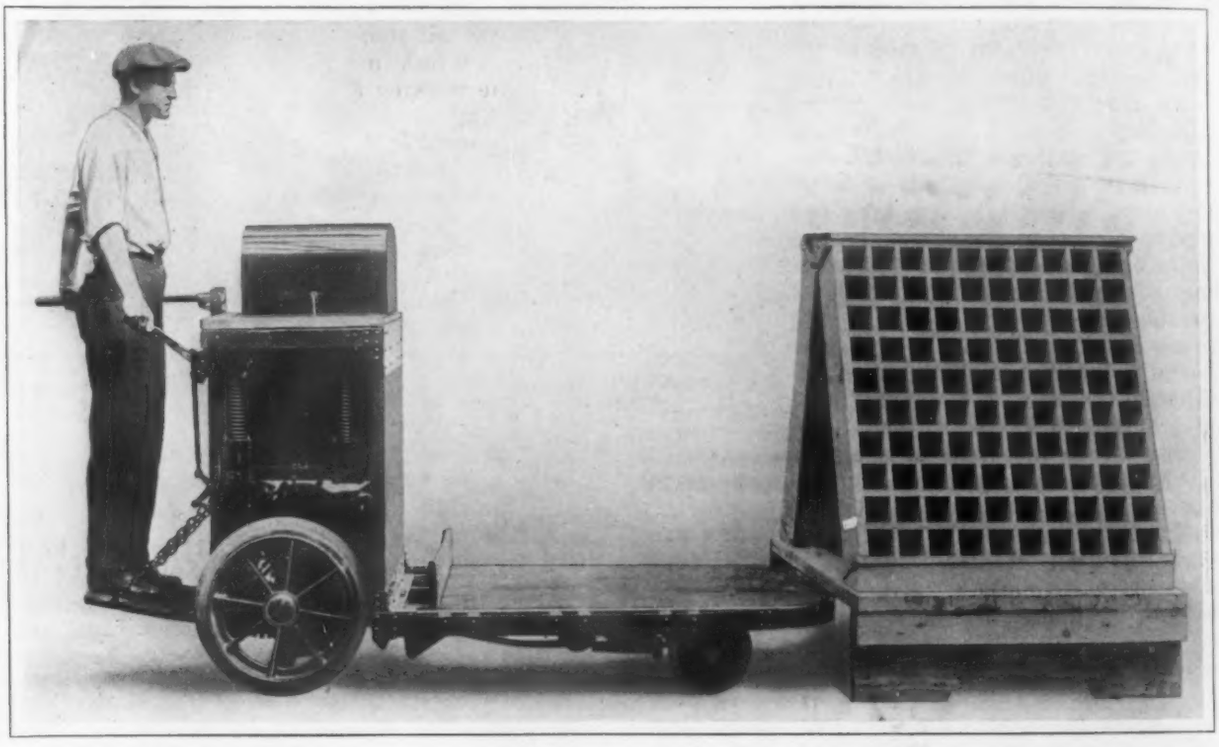
The efficiency of an electric truck for the transportation of material about a manufacturing plant is greatly increased if it is not necessary for the truck to wait for loading and unloading. As an addition to its line of industrial storage battery trucks and tractors, the Elwell-Parker Electric Company, Cleveland, Ohio, has just brought out a truck that is designed to meet this efficiency requirement. It is used in connection with inexpensive wooden or metal platforms, furnished with stakes, hoppers, racks or plain, to adapt them to the products handled. In operation the platform of the truck proper is driven under the separate loaded platform, a switch is closed by the operator on the truck, and the 4000-lb. load, the truck's capacity, is electrically elevated 3 in. in 10 sec. and then hauled away and placed where wanted. Some power trucks have been built with hand-operated platforms, but the operation of these consumes considerable time, as well as the strength of the operator, it is found.

Mounted above the battery box and power plant, and inclosed by a sheet metal cover is a separate electric lifting device which raises and lowers the truck platform. In addition to the platform lifting device, several improvements have been made to the truck as compared with previous types. To propel the truck the operator must mount and stand on a divided platform before the controller becomes operative, or the brake is released. If the controller handle is turned when the operator is standing on the floor, the truck will not start up. The controller handle, when released, returns to neutral position. In addition it is removable so that no unauthorized person may operate it.

There are three speeds in either direction. One side of the divided platform controls a brake and the other the circuit breaker, which is the only disconnecting device between the motor and the battery. The motor is sufficiently large to take the full load of a freshly charged battery. The controller is of the heavy duty drum type and is located just in front of the operator, where it is within easy reach. The steering is accomplished with little effort through a long handle, which gives sufficient leverage. This handle operates in the horizontal plane and points in the direction the truck is going. It steers on all four wheels, making it possible to turn sharp corners, the turning radius being 7 ft. There is an alarm bell, operated by a push button in the end of the steering handle. Service brakes are applied by simply raising one foot. The various features of control aim to make the truck safe and easy to handle.

The power plant has an all gear drive in oil with a first reduction from motor to countershaft in a unit aluminum housing and the second from the differential countershaft through the universal joint pinions to internal gear drive wheels. The motors are of the series-wound type and are dirt and dust proof. Lead, Ironclad or Edison batteries of ample capacity may be used.

This truck is furnished with a diamond steel platform and it may be used as an ordinary electric truck or tractor when not used in connection with separate platforms. A clearance of 38 in. is required for the truck. It is furnished with platforms of different lengths and widths to meet requirements. It is mounted on 3½ x 21⅝-in. driving wheels with solid rubber tires and with 10 or 16-in. rear wheels with single or dual tires. The speed of the truck is five to eight miles per hour. It is stated that its battery capacity will take care of the lifting device and propulsion for 20 to 25 miles travel.



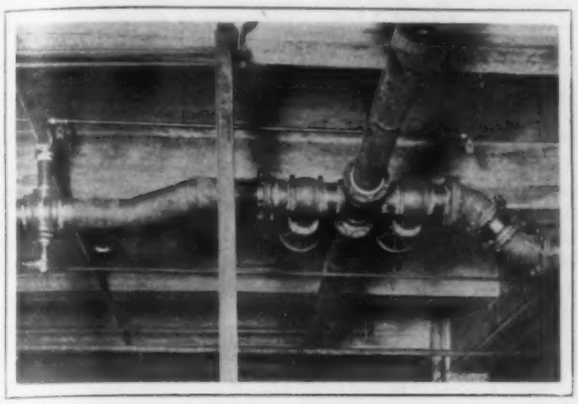
An Elevating Storage Battery Truck That Has Been Brought Out for Use in Connection with the Platform System of Storage in Factories

The accompanying illustration shows one of the trucks used in hauling 200 18-lb. shrapnel shells. The shells are placed in pigeon holes in collapsible wooden racks for convenience in handling about the plant. It is stated that one truck can be used for handling as many as 100 different platforms.

The Standard Bridge Tool Company, builder of the Thomas spacing table, has removed its office from the Bessemer Building to the Fulton Building, Pittsburgh.

Economies of Welded Pipe Connections

The accompanying view of a pipe connection in the plant of the Prest-O-Lite Company, Indianapolis, Ind., is a practical illustration of the adaptability and expediency of welding, the more interesting because of the circumstances connected with the job. It will be noticed that the offset on one side of the line is made with ordinary flanged fittings, while on the other side the pipe, apparently bent, has been offset by a welding operation.



View of a Sprinkler System Connection Showing on One Side an Offset with Flanged Fittings and on the Other Side a Welded Offset

It became necessary to run east and west lines from the 6-in. north and south water main of the sprinkler system in this company's plant. The north and south main is hung so close under the ceiling that the new branches were required to be offset downward to clear the concrete girders and other piping already in place. The thought of making the offset in any other way than by the use of ordinary fittings had not occurred, and when it was found that on one side a drop of 7½ in. was required, which minimum drop is impossible of being secured for a 6-in. pipe with standard fittings and allowances, the connection was made by using regular 45-deg. flanged elbows and nipples, giving a 12-in. drop. The cost of this job is presented in the accompanying table under the first heading.

Offset with Flanged Fittings

7½ in. minimum offset with 6-in. pipe.	
2 6 x 6-in. nipples, at 58½c.	$1.17
1 piece 6-in. pipe, 2 ft. long, at 54c.	1.08
2 6-in. threads, at 42c.	.84
4 6-in. standard companion flanges, at 85c.	3.40
2 6-in. 45-deg. flanged elbows, at $3.27.	6.54
32 ¾ x 3-in. machine bolts, at $10.28 per cwt. less 60 per cent.	1.32
4 sq ft. ⅛-in. rainbow packing, 3¼ lb. at 60c.	1.95
Labor connecting on job, 4 hr., at 30c.	1.20
	$17.50

Offset with Screwed Fittings

7½ in. minimum offset with 6-in. pipe.	
2 6x6-in. nipples	$1.17
2 6-in. 45-deg. elbows	1.94
1 piece 6-in. pipe, 2 ft. 6 in. long	1.35
Labor connecting, 4 hr., at 30c.	1.20
	$5.66

Offset with Bent Pipe

Bent pipe in shop	$18.00
Labor connecting, 2 hr., at 30c.	.60
	$18.60

Offset with Welded Pipe

Welded job (gas and labor)	$3.40

For the branch on the opposite side of the main, however, it was found that a downward offset of exactly 5¼ in. was necessary to clear pipes above and below the new line. The use of standard fittings, either flanged or screwed, was even less a possibility for this smaller offset, and figures were obtained on the cost of bending the pipe for the offset required. These figures are also presented in the accompanying table as indicated.

It was not until then that the idea of laying out a short section, cut at each end at the proper angle to give the offset desired and welding it into the line, was evolved. It was immediately adopted and the work done at a total cost of $3.40, as compared with a cost of $17.50 for the work on the other connection and $18.60 for bent pipe.

The incident is illuminating, not only with respect to the large number of instances where welding can be used to advantage under similar circumstances in any factory, but it also suggests that the logical manner of doing a job, in view of facilities right at hand, is frequently overlooked in favor of the way in which such jobs have been customarily handled at other times.

Adjustable Jack for Emergency Service

Templeton, Kenly & Co., Ltd., Chicago, Ill., have placed the Simplex emergency jack on the market. It is pointed out that this tool practically combines a crane and a jack in one unit and it is also possible to vary the working angle from 30 to 90 deg. with the horizontal.

The standard or frame of the jack is a malleable iron casting reinforced by ribs and the circular bottom rests upon two circular shoulders forming a part of the base. The load is taken by the base and the steel pin serves to hold the frame at any angle within the range available. The frame is kept in a rigid vertical position by the trip at the back of the base and can be released to pivot on the base by depressing the trip. The rack bar and cap are drop forged and the top of the latter is recessed for the 5-ft. length of chain which is furnished as a part of the equipment. The double socket, which is supported by a trunnion bearing, it is pointed out, enables a load to be handled with the jack at any angle. In the accompanying illustration the jack is shown acting as a crane to change the location of a boiler. In this case both pushing at an angle and lifting are necessary and the chain is passed through the holes in the boiler head and hooked in place. The necessary leverage for operating the jack is secured by the use of a 5-ft. steel bar.

An Adjustable Jack for Emergency Service, Which Practically Combines in a Single Tool a Crane and a Jack, Moving a Boiler Where Pushing at an Angle and Lifting Are Required

Supply Manufacturers and Dealers Meet

Manufacturers Plan to Gather Again with the Southern Supply and Machinery Dealers—Live Subjects Discussed—New Officers Chosen

The annual conventions of the American Supply and Machinery Manufacturers' Association and the National Supply and Machinery Dealers' Association were held June 3 and 4 at the Bellevue-Stratford Hotel, Philadelphia, Pa. The sessions were well attended. Marked attention was given to the subjects discussed, and there was a notable absence of interference by entertainment with the serious side of the gatherings. It was apparent that no mind was free from the cloud of world problems from which business is slowly emerging. At the final sessions of the two bodies officers were elected as follows:

OFFICERS OF MANUFACTURERS' ASSOCIATION

President, Farnham Yardley, Jenkins Brothers, New York.

First vice-president, H. E. Dickerman, Chisholm & Moore Mfg. Company, Cleveland, Ohio.

Second vice-president, Charles W. Miller, Jeffrey Mfg. Company, Columbus, Ohio.

Third vice-president, George E. Hall, Boston Woven Hose & Rubber Company, Boston, Mass.

Executive Committee—H. A. Wagner, American Iron & Steel Mfg. Company, Lebanon, Pa.; Edwin A. Ludden, Detroit Oak Belting Company, Detroit, Mich.; Joseph H. Grubb, Hussey-Binns Shovel Company, Pittsburgh, Pa.; E. T. Cooper, Henry Disston & Sons, Inc., Philadelphia, Pa., and Charles J. Graham, Graham Nut Company, Pittsburgh, Pa.

OFFICERS OF DEALERS' ASSOCIATION

President, H. W. Strong, Strong, Carlisle & Hammond Company, Cleveland, Ohio.

First vice-president, W. J. Radcliffe, E. A. Kinsey Company, Cincinnati, Ohio.

Second vice-president, C. Morgan, the Hardware & Supply Company, Akron, Ohio.

Executive Committee—W. T. Todd, Somers, Fitler & Todd, Pittsburgh, Pa.; E. D. Hunn, C. S. Merick & Co., New Haven, Conn.; George Vonnegut, Vonnegut Hardware Company, Indianapolis, Ind., and A. M. Maddock, Maddock & Co., Philadelphia, Pa.

Joint Session of the Two Bodies

The two associations met in a joint session Thursday afternoon, having assembled separately in the morning for their respective initial sessions. At the joint meeting, which was presided over by Mr. Farquhar, addresses were made by C. H. Jenkins, Moran Flexible Steam Joint Company, Louisville, Ky., retiring president of the manufacturers; Charles S. Farquhar, Chandler & Farquhar Company, Boston, Mass., retiring president of the dealers; E. J. Cattell, informally called the City Statistician of Philadelphia, who gave an address of welcome, and P. F. Bryant, sales manager, Babson's Statistical Organization, Wellesley Hills, Mass. Mr. Cattell's address bristled with statistics, yet was tinged with humor and at times the word pictures he drew were most effective. He said that when Philadelphia was called a sleepy place he cited the number of various products which are produced every few seconds in that city and then asked the critics what the town would do if it really woke up. Mr. Bryant said that the fault with the average business man is that he ignores the fundamental conditions which underly his business, that he studies effects and surface conditions rather than causes. He expressed the opinion the war is all that is preventing this country from experiencing the greatest period of prosperity in its history.

Dr. Lee Galloway, professor of commerce and industry, New York University, New York City, and vice-president of the American Fair Trade League, spoke at some length on the "Stevens Bill and the Desirability of Enabling Legislation for Resale Prices." He asserted that the Stevens Bill was important because it touched society at all points, from the consumer to the manufacturer. He said that good-will was something intangible—that it could not be measured with a yard stick, yet its worth was recognized and he likened its value to that which goes with a trademarked article. With such an article not only the product was sold, but a good name—a certain prestige—in which the manufacturer has a property right. As for the price restriction which is involved, he said that every contract means some restriction and there could be no objection to it. He said the restriction fixing resale price might be compared with ordinary contracts.

Proceedings of the Manufacturers

The opening session of the Manufacturers' Association was called to order Thursday morning by Mr. Jenkins and the preliminaries of organization were quickly dispatched. The following committees were announced:

Resolutions—R. F. Valentine, chairman, Mechanical Rubber Company, Cleveland; C. O. Alexander, Alexander Brothers, Philadelphia; H. V. Everham, Keasbey & Mattison Company, Ambler, Pa.; Fayette R. Plumb, Fayette R. Plumb, Inc., Philadelphia; Nathaniel G. Robertson, Wyoming Shovel Works, Wyoming, Pa.

Nominating—John Trix, chairman, American Injector Company, Detroit; Willard Parker, Pennsylvania Shafting Company, Spring City, Pa.; N. A. Gladding, E. C. Atkins & Co., Indianapolis; D. K. Swartwout, Ohio Blower Company, Cleveland; Paul Armstrong, Armstrong Brothers Tool Company, Chicago; I. R. Bailey, Goodyear Tire & Rubber Company, Akron, Ohio; W. C. Carroll, American Sheet & Tin Plate Company, Pittsburgh; Samuel D. Latty, Kirk-Latty Mfg. Company, Cleveland; Charles W. Miller, Jeffrey Mfg. Company, Columbus, Ohio.

Promotion—C. E. Brinley, chairman, American Pulley Company, Philadelphia; C. F. Beezley, Jr., R. R. Donnelley & Sons Company, Chicago; Mason Brittan, Hill Publishing Company, New York; W. P. Bradbury, Manning, Maxwell & Moore, New York; Elmer Crawford, Crawford Publishing Company, Chicago; H. E. Dickerman, Chisholm & Moore Mfg. Company, Cleveland; Edward Ingalls, Atha Tool Company, Newark, N. J.; Charles Lundberg, David Williams Company, New York; J. T. Rose, W. R. C. Smith Publishing Company, Atlanta, Ga.

FAVOR MEETING WITH SOUTHERN JOBBERS

Under the head of new business the question of holding conventions in conjunction with those of the Southern Supply and Machinery Dealers' Association was discussed. The American Supply and Machinery Manufacturers' Association and the National and Southern dealers' associations have assembled at joint triple conventions for a number of years, but about two years ago they could not agree on a meeting place and the Southern Association has since met separately, first at Houston, Texas, and this year at Atlanta, Ga. It has happened that a great many manufacturers and their representatives have found it to their interest to attend informally the convention of the Southern Supply and Machinery Dealers' Association, and at Atlanta, this year, there was an especially large representation, so many, in fact, that what might be termed an unofficial convention was held. In the discussion the point was made that with so many going to the Southern conventions an official meeting should be held, thereby enabling action on such questions as might arise; also that this course would obviate the necessity of attending two conventions.

D. K. Swartwout, Ohio Blower Company, Cleveland, Ohio, believed that good results could be accomplished by meeting with the Southern jobbers. The sentiment in this direction was so strong that a motion that the manufacturers' body should meet with both dealers' associations, offered by R. F. Valentine, Mechanical Rubber Company, Cleveland, was quickly seconded. J. E. Osgood, J. M. Carpenter Tap & Die Company,

Pawtucket, R. I., questioned the wisdom of holding two conventions in the course of a year, to which Mr. Valentine replied that most of the members attend both meetings anyway, those of the American and Southern associations. Farnham Yardley then offered a substitute resolution and Mr. Valentine withdrew his motion. Mr. Yardley's resolution, which was later reported by the Resolutions Committee and passed without opposition, was as follows:

Resolved, That it is the sense of this meeting that whenever it is found impracticable to arrange for a joint meeting of the Southern Supply and Machinery Dealers' Association, the National Supply and Machinery Dealers' Association and our association—our association shall meet with each of the other associations, but that we shall use our best efforts to unite as often as a triple convention.

INDIVIDUAL POWER PLANT DEFENDED

After the conclusion of the business the members were addressed by C. M. Ripley, Richard D. Kimball Company, New York, whose subject was "The Power Problem." He gave an illuminating defense of the independent power plant as opposed to buying power from public service companies. One of the points he made was that, almost as a rule, power, and not heat, is the by-product of a plant. He dwelt strongly on the value of exhaust steam for heating purposes, saying that it differed from live steam only in that it had lost its pressure. He regarded it as fortunate that manufacturing plants usually need the most power at seasons when the most heat is needed. Only where there is intermittent need for power could he see that there was any wisdom in buying electric power.

The speaker cited a mass of figures intended to dispute the claims of public service companies that they could supply current more economically than private plants could manufacture it. He asserted that the advertising of electric companies was misleading and said that he had ascertained by personal examination that companies had overstated the number of private plants abandoned, their cost of operation, etc. As to cost of operation, he said the figures were greatly in favor of the private plant, while as to fixed charges he said there was a wealth of misinformation. He did not regard it necessary to charge off 10 per cent. each year against depreciation. He said it was unfair to compare the abandonment of large equipment in big public service power stations with what might ensue in a private plant. In the smaller plant the things which wear out are easily and cheaply replaced.

Frederick A. Hannah, consulting engineer, New York, addressed the members on "Organization," dividing his subject into these sub-heads: Finance, accounting and clerical work, purchasing, engineering, manufacturing and distribution. He particularized the work of each department, and among other things said that if a man was performing more than one function it was probable that he was not doing more than one of them effectually, and that each man should be responsible to but one superior. He said that a business should be adjustable to variable conditions and suggested that there be a distinct and fixed organization or nucleus for normal periods which could be added to in time of pressure and quickly receded from when it became necessary to cut.

DIFFICULTIES BEFORE THE AMERICAN MANUFACTURER

The manufacturers on Friday morning merged into one their two sessions scheduled for that day. They listened to an address by Dr. Robert Grimshaw, school of commerce, accounts and finance, New York University, and concluded their business. Assistant Secretary of Commerce Edwin F. Sweet was to have spoken but could not be present.

Dr. Grimshaw said the manufacturers of this country have three problems to consider in the matter of business after the war, namely, the markets of the belligerent countries of Europe, those of neutral countries other than the United States, and that of the United States. In a short time the speaker touched on a great many subjects. He declared that there is an unfortunate idea in this country that high wages mean prosperity, a belief which had been expressed by Secretary Redfield, and to which he took exception. He pointed out the anomaly of all mechanics wanting high wages, yet expecting to buy what they use at low prices. Referring to the tariff as adjusted in Germany, Dr. Grimshaw, who has been in that country for a number of years, said that the Germans do not engage lawyers to make changes in their duties, but select professors, engineers and merchants, and that machinery which can be used in producing goods which the Germans can sell outside of their country is admitted free or at a low rate, whereas goods that conflict with the German product have a prohibitive rate placed upon them. Here, he said, the tariff is fixed by persons who either know too much or know nothing about the subject and the first class is working for its own pocket. He reiterated much that has been said in regard to German railroad discrimination in favor of home products to be exported. He advocated retaliatory measures to combat the attitude he found in both Germany and Austria.

In alluding to our lack of a merchant marine, and referring to difficulties which would be encountered even if this country had ships, he said the securing of proper docking facilities at German ports would prove a hindrance to the expansion of our commerce in our own ships. He laid stress on the ignorance of geography shown by many Americans writing to German or Austrian houses; on contracts obtained which were never filled because the home trade was good; on machinery received badly damaged because of improper crating, or no care taken to guard against rust, or essential bolts and screws omitted from shipments. The last was not a simple matter inasmuch as the foreign bolts differ from the American in number of threads to the inch. He also told of unreasonable terms of payment, even where the buyer was the great Krupp firm. Dr. Grimshaw said that after the close of the war 2,000,000 men in Germany will be looking for work and Germany will put them to work at 50c. a day if it can do no better and this country will get its share of the product, while also to be considered are the manufactures which women and children are now making and which will be dumped here after the war at prices with which we cannot contend. He finished by saying that to compete with foreign products the unit cost of our manufactures must be cut to the bone and that the start must be made without delay. He compared manufacturers with the man who ran after a train and did not catch it—the unfortunate runner ran fast enough, but he did not start soon enough.

President Yardley, in his address of acceptance and thanks for the office conferred on him, said he hoped that every member would return home with the resolve to fly the United States flag on June 14, the 138th anniversary of its adoption, at their homes, shops and warehouses. On behalf of the members, R. F. Valentine presented Mr. Jenkins with a silver pitcher, after which the convention was declared adjourned.

Supply and Machinery Dealers

The tenth annual convention of the National Supply and Machinery Dealers' Association was called to order Thursday morning by the retiring president, Charles S. Farquhar, who in his opening address said in part:

"Business has been very unsatisfactory as a general thing the last year, but the spring months have seen considerable improvement, though it is what might be termed 'spotty.' A portion of the increased business may be traced, directly or indirectly, to war orders which have been placed by belligerent nations. Many of these orders are very large, and the resultant purchase of tools and supplies has been very great and has been welcome to a number of our houses in supplying the call for merchandise which was not moving with anything like the accustomed regularity.

"This has put many of the factories which we have the pleasure of supplying with merchandise on full time, with the result that it will make mill supply manufacturers and dealers quite busy for the time being. However, this source of business is only temporary at

best, and only the return of normal conditions will put us on the good, solid basis on which our business should stand.

"I can see no reason why this association should not endeavor to have every dealer make adequate allowance for every element of cost as a basis for determining whether or not his business shall be conducted in a progressive manner. Costs should include not only every item of cost and depreciation but also provisions for interest on investment.

"The agitator and his ilk have spoken carelessly regarding the value of the services of the distributer. The public interest can be shown here in a manner which is absolutely convincing. It has been said that the mill supply business is largely an emergency business. The character of orders received by the members of this association will go far to support this statement.

"The varied stocks carried by our members of goods needed in the factories, mills, mines and railroad shops of the country are drawn upon for demands which must be filled instantly. Delays in waiting for goods to be shipped from factories located in distant cities would be so costly that a moment's consideration shows clearly that such a method of service would be out of the question. Then, too, the service of the dealer involves the distribution of expense over hundreds of lines of goods where direct factory connection would mean a burden of expense upon one line which would make the cost all out of proportion to what it should be. Therefore the natural economic developments serve not to weaken our position as business men, but rather to strengthen the position occupied by us as distributers of the varied lines of merchandise called for by the mills, mines, factories and railroads which we supply with goods.

"In July of last year our association was represented at a conference held with President Wilson for the purpose of expressing to him the views of our members on certain legislation which was then before Congress. The President received the delegation not only with his usual generous courtesy but with attention and interest which were very gratifying, especially at a time when other matters were occupying his serious attention. The delegation left with the President a memorandum of the views of the wholesalers they represented, and we can but believe that the changes subsequently made were influenced, at least in part, by the statements of fact thus presented."

SECRETARY FERNLEY'S REPORT

The annual report of Secretary-Treasurer Thomas A. Fernley touched on the many activities of the year. In part, he said:

"The work of trade associations had, until the last few years, been done in secret. While the opinion was held by the members that everything then done was proper and right, it would properly be conceded that some of the practices then followed would not be approved in the light of the wider experience which has brought about a change of opinion. The changed attitude and the different methods of association work have been for the best, as is proved by the manner in which the public and the Government are consulting and respecting the views of business men as expressed through their trade organizations.

"The association the past year has collected important information from the members relative to their method of keeping a record of stock of merchandise on hand, ordered, etc. This information has been furnished to every member, photographic copies being made of many of the forms used by the houses that advised us of their methods and sent us sample copies of the records. This interchange of information has been declared to be quite helpful and is illustrative of the fact that much additional information of this character may be had by our members should they wisely determine to enlist the help of the association in solving their individual problems. Further information was collected and distributed regarding the method of pricing goods and the system of keeping a record of prices quoted customers.

METHOD OF MOVING EXCESS STOCKS

"As is well known to you the secretary's office has distributed numerous lists of overstocks of merchandise in the hands of our members. This distribution has resulted in almost every case in moving the merchandise of which a member had an overstock and which another member found he could use to advantage. A continuation of this plan is recommended. It constitutes one department of work where members can get very definite aid and benefit from their connection with the organization.

"The association is on record as recommending that manufacturers do not make changes in list prices which will have the effect of making printed catalogs of our members useless. Every time a manufacturer changes his list price, a contention is set up that such change is absolutely unavoidable. We feel that it would be wise for this convention to consider again this question and suggest some way in which the manufacturing interest may be advised of the reasons why the members are opposed to changing list prices and thus make further progress in presenting reasonable request to the manufacturers whose product we distribute.

"The association has continued its suggestion that a discount of 2 per cent. given to customers for the payment of invoices within 10 days from the due date is effective in promoting prompt returns and is helpful in the financing of business as well as operating as an important safeguard to credits.

"There has been some misunderstanding and consequent unsatisfactory action concerning Section C of the new Federal trust act, formerly called the Clayton bill, relative to so-called tying contracts. The law appears to hold that such a contract is invalid only where it serves to establish or maintain a monopoly or where it substantially lessens competition. The clause, therefore, would appear to constitute no bar to usual and ordinary exclusive agency contracts entered into between the members of this association and the manufacturers, save that, while the manufacturer can agree to sell only one dealer in a territory, the dealer cannot be bound to purchase goods exclusively from that manufacturer."

FOREIGN AGENTS QUOTED DIRECT

The meeting was addressed by James F. Gleason, Montgomery & Co., Inc., New York, who presented the claim of the dealer for greater protection on the part of the manufacturer in the matter of prices. Mr. Gleason said that some manufacturers have a preferred list of consumers, including railroads, telephone and telegraph companies and other large consumers, to whom they are willing to sell on the same basis as they sell to the dealer. He also said that since the beginning of the war certain manufacturers had quoted to foreign buying agents prices on tools and kits of tools lower than the dealers could possible make. It was agreed in the course of discussion that the conditions in New York City were particularly bad. The only remedy suggested was further education of the manufacturer. It was the consensus of opinion that it was ethically unfair to load the dealer with stock and then covertly undersell him. It was also decided that, while automobiles are excellent for the use of city and suburban salesmen, they are not of such value to out-of-town men.

The following nominating committee was appointed: W. L. Rodgers, Pittsburgh Gage & Supply Company, chairman; W. A. Ridings, Syracuse Supply Company, Syracuse, N. Y.; S. A. Courson, E. Keeler & Co., Williamsport, Pa.; C. H. Mueller, Philip Gross Hardware Company, Milwaukee, Wis., and W. B. Yost, Stambaugh-Thompson Company, Youngstown, Ohio.

The convention at the Friday morning session, with which was combined the afternoon session, was addressed by E. E. Sheasgreen, manager of the Standard Cost Finding Service Company, Chicago.

The members received a confidential report of an investigation into the cost of doing business, the findings of which had been charted to show the overhead expenses of a number of members who had submitted figures.

IMPORTANCE OF SYSTEM IN PURCHASING

W. E. Frick, president Frick & Lindsay Company, Pittsburgh, Pa., made some remarks on the subject of purchasing. He urged greater attention to buying and said that some buyers were apt to forget the ethical side

of their work and to encourage the impression that the matter of price was all that was to be considered. He said he had in mind the appointment of an assistant buyer, whose business it would be to forget prices and devote himself to the analyzing of propositions. Such a man, he said, could relieve the purchasing agent of many details. The business of buying should be conducted on a broadminded plan.

A number of subjects of intimate interest to the trade were discussed by the convention and others were left for discussion by mail. A resolution was adopted authorizing the creation of a class of associate members of the association. On motion of E. E. Strong, Strong, Carlisle & Hammond Company, Cleveland, Ohio, a resolution was passed providing for the appointment of a committee of seven members to work for a more complete attendance at conventions.

The next convention will be held at Cleveland, Pittsburgh or Atlantic City, as determined by a mail vote. The Manufacturers' Association was thanked for the entertainment it had provided, and the speakers also for their aid. Just before adjournment W. L. Rodgers, on behalf of the association, presented Mr. Farquhar, the retiring president, with a set of silver and china after-dinner coffee cups.

In all, 260 persons attended the two conventions, and of the total number 135 were manufacturers or their representatives. On the evening of Thursday there was a vaudeville-smoker, and the following evening a dinner-dance. Special entertainment was provided for the ladies on each day. Several of the members arrived in Philadelphia on Tuesday to enter the golf matches of the Manufacturers' & Distributers' Golf Association, which were played on the two days preceding the conventions and for which prizes had been donated by several manufacturers and the Golf Association.

What Business Asks of Trade Commission

New York Hearing Develops the Need of Combinations to Secure and Hold Foreign Trade—Action Needed to Prevent Dumping

New York business men consider the Sherman law and the country's inadequate merchant marine the most important matters with which the newly organized Federal Trade Commission is confronted, according to testimony given before that body at its New York hearing, June 3 and 4. Representative men from business, professional and financial circles agreed upon the importance of these considerations, though there was a diversity of ideas as to what action the commission should take. All the members of the commission were in attendance—Chairman Joseph E. Davies, Vice-Chairman Edward N. Hurley, George Rublee, William J. Harris and Will H. Parry.

SHIPPING, CREDITS AND CO-OPERATIVE EXPORTS

Most in evidence was the desire to clarify the situation as affecting prospective trade combinations to carry on export business, in their relation to the Sherman anti-trust act as interpreted by the courts or likely to be interpreted. Practically all the witnesses touched on this subject in one form or another and all were agreed that uncertainty as to the intent and interpretation of the law is the most substantial hindrance to the formation of combines suitable to cope with cartels and other combinations in outside markets and in our own as well. Allied with this proposition was the proposal that such combines be enabled to fix prices in the export field inasmuch as this would be essential to competition on equal terms with the foreigners. Perhaps next in general interest was the question of providing adequate shipping facilities for American goods when the demand grows in foreign markets. The matter of credits was discussed in a more or less desultory fashion, the impression being evident that this problem would solve itself as the foreign markets became aligned for United States products. With respect to the Latin-American market particularly, an interesting proposal was advanced by Woolsey H. Field, of the United Export Bureau, who suggested that the Government establish low price bonded warehouses at suitable points throughout Central and South America, with a view to relieving the strain of long credits.

DOUBT IS PROHIBITION

Proceeding on the assumption that it is practically impossible to cope on even terms with foreign interests in the absence of combines of American traders in the export field, the doubtful interpretation of the Sherman law loomed up as the most substantial barrier. This doubt, it was agreed, is holding back business men, big and small, and there will be no considerable improvement until it is cleared away. This thought was forcibly expressed by Henry P. Davison, of J. P. Morgan & Co., on the first day of the hearing. Following his advocacy of an improvement in shipping conditions, Mr. Davison said:

"The question must be solved if we are going to look for a material increase in foreign trade. Some form of combination of our business units must be devised if we are going to do much in the foreign markets. Combination would make it possible to cut down costs and effect concentration. Nobody knows what the Sherman anti-trust law prohibits, so the effect would be just the same if it did prohibit."

Mr. Davison's thought was repeated on the second day of the hearings by Joseph P. Grace, of William R. Grace & Co., bankers and exporters. "In this question of combination for export purposes," was his argument, "doubt is equivalent to prohibition." This form of clothing the idea evoked a warm expression of approval from Chairman Davies.

The attitude of the commission toward the export problem as affected by the Sherman act struck the observer as most interesting. Repeatedly the suggestion of combination was drawn from witnesses by questions of the commissioners and time after time the chairman inquired in detail as to the existence and methods of foreign combines competing with American producers and traders. The tone of the commission's questions made it difficult at times for an auditor to suppose that the body was assured of any intent of the Sherman act to prohibit American combines from combatting foreign ones in outside markets. Commissioner Rublee, one of the lawyer members, again and again requested witnesses to state their reasons for supposing that the Sherman law forbade such combines, asking in particular if they had had any such intimation from the Department of Justice.

PREVENTION OF DUMPING

Some of the witnesses went into the need of an anti-dumping law, there being an apparent apprehension that the close of the European war will see the practice carried out on a larger scale than ever before, the expectation being that the Europeans will open their factories and operate them to capacity, absorbing the losses on surplus production sold below cost. The situation was discussed comprehensively by W. H. Taylor, president of the David Williams Company, which publishes *The Iron Age*. Mr. Taylor cited the case of T rails as exemplifying the evils of the practice, calling attention to Canada's high tariff on rails, which makes it difficult for the American producer to find a market in that country, while having no means, such as an anti-

dumping law, to prevent the Canadians from underbidding our manufacturers, even when selling at a loss. In the case of a purchase of 35,000 tons of steel rails made by the Illinois Central Railroad some time ago, according to Mr. Taylor the domestic producers bid on the basis of $28 a ton, the standard price, while the Canadians got the business by offering the rails at several dollars a ton less, even at a time when the product was selling in Canada at $32 or $33 a ton.

Mr. Taylor said he did not blame the railroad for placing the order on the most favorable terms, but urged that such a condition would have been impossible if we had had an anti-dumping law similar to those of Germany and other countries. The practice of selling rails at a standard price makes for stability. Under a condition of fluctuating prices a railroad may raise the funds necessary for a purchase of a needed quantity of rails and then when it goes into the market may find the price has risen and be unable to make the purchase with the funds on hand. The stable price obviates this possibility.

Mr. Taylor displayed some interesting exhibits in the shape of German-made locks and keys destined to be sold here at absurdly low prices, far below current prices here. Mr. Taylor admitted he could not see how there could be any profit in these goods. He ascribed the condition to the German practice of operating the factories to capacity and following the dumping process in the event of a surplus.

FIGHTING WITHOUT RULES

John D. Ryan, president Amalgamated Copper Company and a member of the National Trade Council, after describing the methods of foreign combines in export markets and in import transactions as well, and touching on the lack of co-operative action among producers and traders of this country, drew a comparison between this situation and the case of a prize fighter who finds himself in the ring against a man who makes his own rules. In our "foreign trade we have not only to contend with each other, but also with combines of other nations who don't observe our rules of fighting." Under existing conditions, according to Mr. Ryan, copper produced here is bought up at sub-market prices by foreign cabals, the result being that the American manufacturer pays ⅞c. per pound more than the German. This ⅞c. represents the cost of manufacture, so the German maker owns his finished product at the price the American manufacturer pays for the raw material. Mr. Ryan described the manipulations of foreign cliques and their schemes for setting the Americans to quoting against the alleged prices of their competitors.

Roger W. Babson, of the Babson Statistical Agency, took the view that it would be better to let the larger corporations shift for themselves, while permitting the smaller concerns—those of $1,000,000 capital or less—to form into combines. Mr. Babson was not inclined to take an optimistic view of the prospects of American business in the foreign markets until such time as our young men—"flesh and blood" of this generation of producers—shall have been trained in the countries of their future activities and sufficiently imbued with the spirit of the various peoples to meet them on a basis of understanding and sympathy.

Mr. Babson's contention that the large corporation can carry on its foreign trade without combines was disputed by Waldo N. Marshall, president of the American Locomotive Company, who stated that his concern, capitalized at $50,000,000, found it not feasible to finance selling agencies in various parts of the world. "This condition," said he, "existing for us in some sections, must exist for smaller concerns in the foreign field as a whole."

W. E. SAUNDERS ON FOREIGN TRADE

William E. Saunders, chairman of the board of directors of the Ingersoll-Rand Company, came before the commission with a well ordered digest of the ethics of foreign trading as he viewed it. He developed his argument from three major points: first, that this country has no concern with the interests of foreign traders and our laws should not therefore be extended to cover those interests; second, that it is not contrary to the spirit of the Sherman act to combine for the exploitation of foreign markets; third, that violations of the law affecting interstate business can be reached and dealt with by existing statutes. He urged that large corporations be forced to take in smaller concerns when combining for export business. Mr. Saunders may be said to have summed up the wishes of all the witnesses when he urged that legislation be enacted to the effect that combinations for foreign trade, which do not restrain or monopolize trade within the United States, shall be lawful.

W. S. Kies, manager of the foreign trade department of the National City Bank, said that he had recently interviewed hundreds of business men in connection with the work of the National City Bank in its foreign branches. The general opinion, he commented, was that foreign trade was essential to the permanent prosperity of the country. The progress made abroad in the last eight months, Mr. Kies said, has been made chiefly by large corporations, who can bear the $4000 to $8000 expense of a traveling salesman. American concerns find also, he commented, that they must compete among themselves in giving credits as long as the present system continues. Mr. Kies has worked out a plan for co-operative organizations of American companies to engage in the foreign trade, each producer desiring membership to subscribe to a definite amount of stock. This he presented originally in an address before the American Academy of Political and Social Science, Philadelphia.

The Hearing at Boston

That combinations in export trade are desirable and necessary and that they must be extended so as to include financial institutions was the general opinion expressed at the Boston hearing of the commission, held on June 1 and 2. Boston exporters consider the Sherman law and inadequate banking facilities the chief obstacles in the way of the development of the South American trade of the United States. To these two, some were inclined to include what they termed the "failure to protect American citizens and capital in foreign countries." A constructive criticism came from G. F. Willett, of Willett, Sears & Co., cotton merchants. He suggested that the consular service be reorganized upon a business basis, the Government's agents to be paid according to the trade results they were able to show. It was contended that such a plan would attract men of larger caliber and that American manufacturers would benefit by their greater activity.

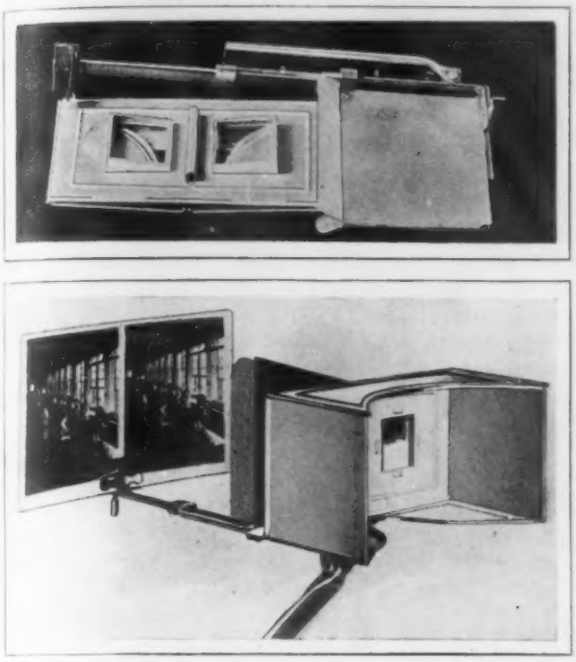
Railroad Car with a 300-Hp. Gasoline Engine

What is said to be the largest gasoline motor car for railroad use in the United States has been built by the McKeen Motor Car Company, Omaha, Neb. It is a 70-ft. baggage, mail, express and power car, equipped with a 300-hp. engine which will furnish sufficient power to haul a standard steel railroad coach as a trailer. It will be placed in service on one of the branches of the Union Pacific Railroad and will be substituted for a three-car steam passenger train having a seating capacity of 70, while the motor car train will seat 78 passengers. A round trip of 206 miles per day will be made. The engine is an enlargement of the builder's 200-hp. engine. It is reversed by air pressure mechanism, the control of which, together with the throttle, is placed on the right hand side of the engine, thus enabling the motorman to remain seated while taking signals and operating the car. The length of the car is 70 ft. and the total wheel base is 44 ft. 2 in. The weight on the drivers is 33,800 lb. and the tractive effort exerted by the engine is 8200 lb.

The Columbia Sheet Steel Company, East Liverpool, Ohio, recently formed to build a sheet steel plant, has been incorporated with a capital stock of $600,000 by A. L. Petty, S. R. Bigler and Harry Wright, all of Pittsburgh, and T. V. Milligan and G. A. Shecker, of East Liverpool.

Machinery Photograph Display Device

For bringing directly before the buyer's eyes the bulk or weight of machinery and various other large articles, the Corte-Scope Company, 5612 Carnegie avenue, Cleveland, Ohio, has brought out an



Two Views of a Device for Showing Photographs of Machinery and Other Objects where It Is Desired to Bring Out the Various Proportions. The upper view shows the device folded and the lower one illustrates it in use

instrument resembling the stereoscope. The particular advantage claimed by the company for the two-eyed photographs used is that the three dimensions of hight, width and depth can be shown while the one-eyed photographs only give suggestions which must be visualized through the imagination by drawing upon the supply of mental images stored up through previous actual vision with two eyes.

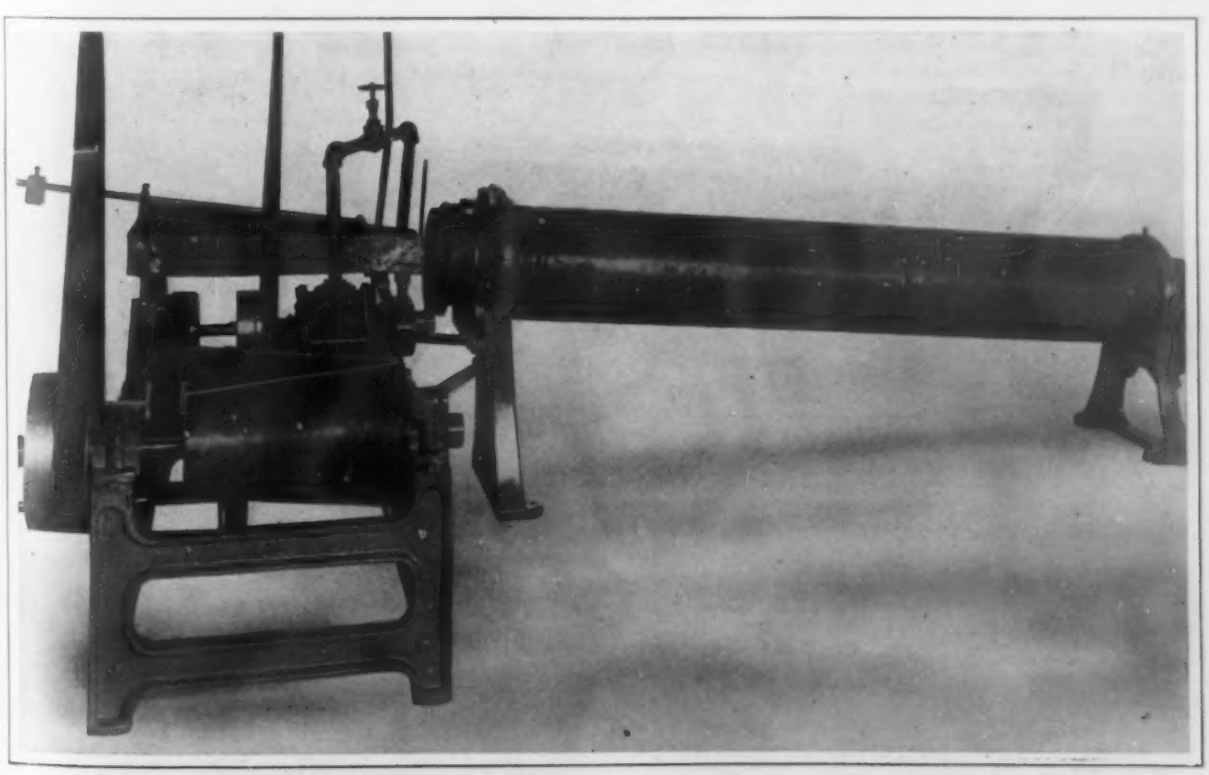
The Corte-Scope is a small collapsible instrument occupying no more space than a pocket billbook and it is possible for a salesman to carry in a pocket leather case the complete outfit including the instrument, from 50 to 75 photographs and a supply of printed matter. While the outfits are said to be adaptable to practically every line of business, one of the fields in which they will be of great use, it is explained, is in showing the detailed construction of machinery and processes of manufacture. The instrument and the case are said to be no more expensive than a leather case for 8 x 10-in. photographs, while the photographs themselves are from 40 to 60 per cent. cheaper than ordinary ones.

Internally Fired Nail Bluing Furnace

For finishing nails with the regulation blue coating, the Henry Perkins Company, Bridgewater, Mass., has brought out an inclined rotary furnace of the internally heated type. The machine requires no foundation or brickwork, it is emphasized, and is ready for use in approximately 30 min. after the gas is lighted.

The furnace has an inclined revolving barrel 8 ft. long of 7-in. steam pipe. This is mounted on an iron frame and runs on rolls at each end, the thrust being taken by the one at the upper end and thus leaving the lower end open for the exit of the nails. The nails are heated from a 1-in. gas pipe running through the center of the barrel for its entire length and bored to give two lines of jets which are directed on the nails as they pass through. This direct application of the heat to the nails is relied upon to eliminate any tendency to burn out the barrel. An air space of 1⅞ in. is provided around the revolving barrel by an asbestos covered jacket of ⅛-in. sheet steel 12 in. in diameter.

Air is supplied by a positive blower, mounted on an iron frame which also carries the tapered wooden cones for regulating the speed of the bar-

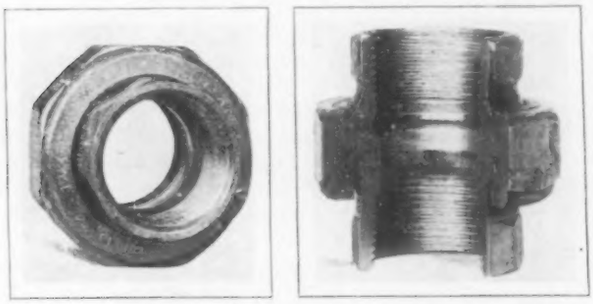


An Inclined Internally Heated Rotary Furnace for Bluing Nails

rel. The barrel driving mechanism and an adjustable arrangement for agitating the hopper and feeding the nails evenly to the barrel are also mounted on the frame. With the exception of the speed regulating cones, all the parts of the furnace are of iron or steel. The bearings with the exception of the rolls on the barrel are self-oiling.

Pressed Steel Union of New Design

The first pressed steel pipe union, manufactured by the Mark Mfg. Company, Evanston, Ill., was described in *The Iron Age*, June 5, 1913. In the original union a hexagonal wrench grip was se-



Exterior and Cross-Section of a New Solid Pressed Steel Union

cured by turning back the shell to a depth of a fraction of an inch. In a new design of this union recently perfected, an octagonal nut, formed out of solid stock, has been substituted. This is illustrated in the views of the union. An interesting test was made of the strength of this nut and the effectiveness of the joint. A 1-in. union with a hook screwed in at each end supported 22,000 lb. of skelp suspended from a yard crane for a period of 5 min. The union was then taken down and connected up in a steam line under 90-lb. pressure without showing any signs of a leak.

The second feature in which the improved union differs from the first design has to do with the hardened brass seat which is now welded solidly with the steel. It has been possible to secure such conjunction of the two metals that the brass seat resists separation from the steel, even to the point of rupturing the steel before giving way. Views are shown of a half of the union which has been subjected to extreme distortion. In none of the cracks that has been developed does the brass seat appear to have broken away from the steel, and it was found practically impossible by using a cold chisel to sever the brass cleanly from the steel.

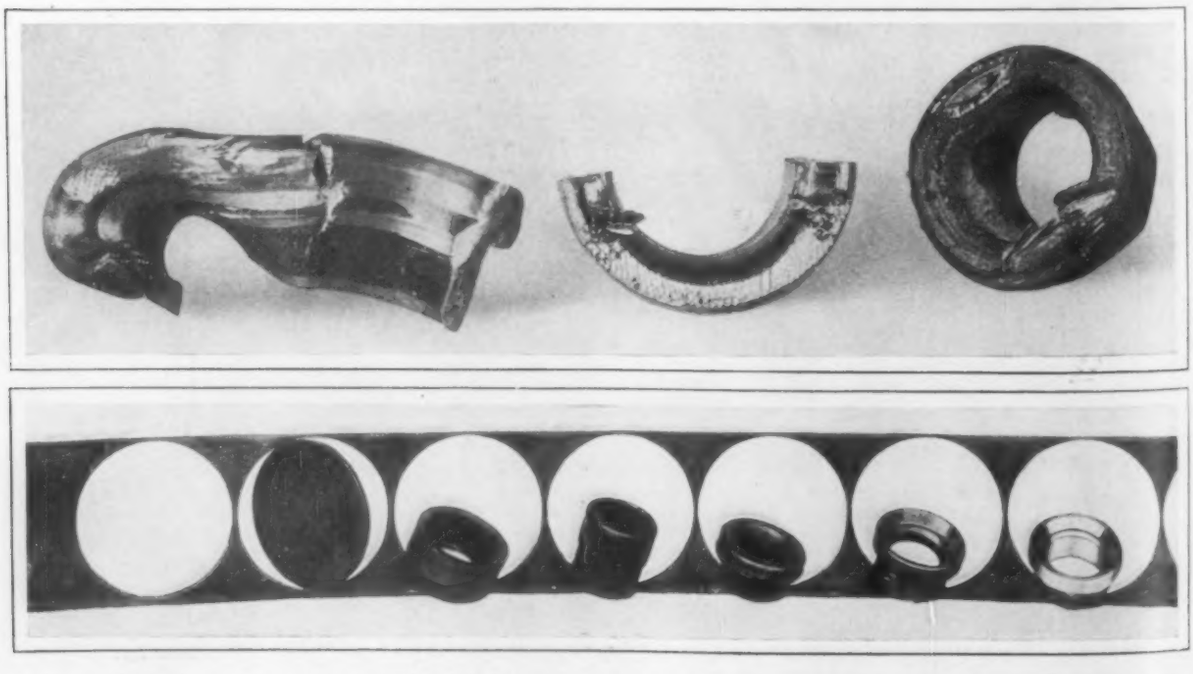
The several interesting press operations involved in the forming of the parts of the union are also illustrated, the work on the new union being done with the same press equipment as was provided for the manufacture of the first union.

A Small Steam-Driven Air Compressor

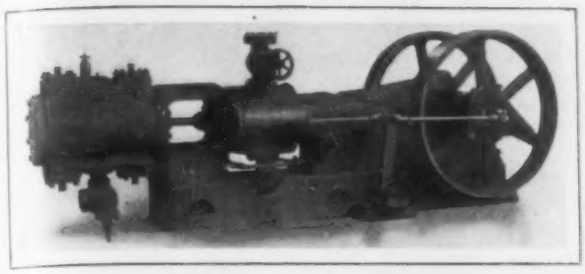
A small steam-driven high-speed air compressor has been developed by the Ingersoll-Rand Company, 11 Broadway, New York City. While the general design of the compressor is the same as the builder's former units of this type, a number of improvements have been made in the design. These include the use of a special type of air valve, balanced piston steam valves and automatic cut-off control and splash lubrication, all of which it is emphasized tend toward increasing the efficiency of the air end and lessening the steam consumption.

The balanced piston steam valve used resembles that employed in Europe, and its use, it is pointed out, permits higher speeds and steam pressures to be employed as well as enabling superheated steam to be used. The automatic cut-off control is regulated by a centrifugal flywheel governor, which acts to shorten or lengthen the stroke of the piston valve and thus change the point of cut-off. This control is relied upon to give steam economy under varying load or steam pressure. An air unloader is also employed to supplement the automatic cut-off control.

The air valve is of the Ingersoll-Rogler type, which is now the standard on the company's power-driven compressors. The advantages claimed for this valve are practically no noise in operation and the entire freedom from operating mechanism. Before adopting this valve a thorough test was conducted to determine its life. This consisted in running a compressor with a stroke of 12 in. at a speed of 400 r.p.m. for more than a year. It is



One of the Unions after an Unsuccessful Attempt to Separate the Brass Seat from the Steel by Distorting the Union
Press Operations on One End of the Union



A New Small Steam-Driven Air Compressor Equipped with a Special Type of Valve and Automatic Cut-Off Control of the Steam Supply

stated that during this time none of the valves were broken nor were any adjustments required.

The automatic splash lubrication is designed to oil all the wearing parts automatically. The use of inclosed construction with movable covers is relied upon to give accessibility and secure cleanliness. Provision has also been made for the ready adjustment of all parts subject to wear.

New Tool Steel Company Organized

The Century Steel Company of America has been organized to make in America the high grade steels that were formerly imported from Sheffield. It is planned to import steel ingots from England and melt them preparatory to hammering and rolling the finished products. These will include high speed cobalt and tungsten, carbon tool, chrome, chrome-vanadium, chrome-nickel and nickel steels, ingots, blooms, billets, slabs, bars, wire and drill rods, sheets, shapes and special products. The office of the company is located at 191 Pearl street, New York City, and the plant will be at Bridgeport, Conn. It is expected that about three months will be required to get the plant at Bridgeport working as part of the equipment will have to be brought from Sheffield, England. The officers of the company are as follows: President, F. B. Lown, formerly Eastern manager of Edgar Allen & Co., Ltd., Sheffield; vice-president, H. B. Perkins; treasurer, W. B. Dukeshire of the Dukeshire Iron Works; secretary and general manager, J. J. de Boves, formerly with the Swedish Iron & Steel Corporation, and production manager, John T. Whitely.

Tin Smelting in the United States

At last the United States is to have a tin-smelting industry, says the Engineering and Mining Journal. The American Smelting & Refining Company is erecting at Perth Amboy, N. J., a plant that is expected to produce 3000 to 5000 tons of tin per annum. This will be supplied chiefly with ore bought in Bolivia, but parcels will no doubt be obtained also from other sources. It is expected that the new plant will be ready for operation about the end of this year. The position of the United States as the world's largest consumer of tin and as the producer of none has often been discussed, and it has also been hoped that Bolivian tin ore would at some time be brought here for smelting. We shall now hope that the new enterprise will be so successful that eventually the entire output of Bolivia will come hither.

The N. Z. Graves Company, paint manufacturer, with large plants in Camden, N. J., and Trainer, Pa., which has been in the hands of receivers for about two years, has been reorganized and financially rehabilitated under the name of the N. Z. Graves Corporation. The new company is chartered under the laws of Pennsylvania and has a capital stock of $600,000. N. Z. Graves is president and Franklin d'Olier is chairman of the board of directors.

The American Institute of Chemical Engineers will hold its seventh annual meeting at Los Angeles August 18 and at San Francisco, Cal., August 25 to 28.

FAR WEST IRON AND STEEL

A New Rolling Mill Building at Salt Lake City

SALT LAKE CITY, UTAH, May 27, 1915.—With the mines and smelters busy producing copper and lead, and farmers enjoying a degree of prosperity which is indicated by purchases of woven wire fencing where barb wire formerly satisfied, Salt Lake City feels cheerful. A buoyant attitude waits on railroad buying and this center feels that some of this will rightly come to it. No real estate boom, it is claimed, has been fostered and building operations are moving along at a steady gait. No inflation in this respect yet appears; in fact, there is a scarcity of rentable property. Save for a brief period following immediately after the outbreak of hostilities in Europe, business has been good rather than bad. In finished steel lines, consumption has been chiefly in wire products and reinforcing bars. Prices have generally conformed closely to Pittsburgh plus freight, but from reliable sources at least one case is reported of steel bars being sold for a figure corresponding to 1.20c., Chicago.

Remote from centers of production, Salt Lake City naturally pays well for its iron and steel, but it is not vitally concerned over the tariff. Chinese iron, to be sure, has been used, but the quantity reaching this center has not been significant. Freight charges work also against the ready admission of steel by way of the Panama Canal. Possible changes in rates have no influence toward postponing buying, as they represent adjustments and at most are relatively small.

One interesting development is the building of a rolling mill by interests owning the Utah Junk Company. The territory supplies sizable volumes of iron and steel scrap, largely from the railroads. The smelters are large users of this as a fluxing medium, but the quality best adapted to heating and rolling into bars is not essential, if indeed as satisfactory to the smelters. Accordingly, to secure a market for this scrap, the new mill is being pushed toward completion so that merchant bars, reinforcing bars, light angles and the like may be marketed by July 1. W. W. M.

Eastern Washington Business Situation

SPOKANE, WASH., May 25, 1915.—Spokane, while not a large user of iron and steel, is a bright spot. Crops are promising and large returns have been received from the last wheat harvests. The farmers are accordingly prosperous. Sales of merchant bars, nails and wire fencing have been as good as last year and in some cases better, and the expectations for the remainder of 1915 are equally cheering. The copper and lead mining business done through here has also been profitable and is reacting to help general sentiment.

The business men have association habits and it appears the ordinary thing to be a member of a number of trade and allied organizations. Among these the Chamber of Commerce is active with weekly luncheons and a speaker on topics of direct interest. The result is that interchange of ideas is promoted apparently rather well.

The local lumber business is down, waiting an outside demand, and sawmill machinery is dull. The metal trades, not of great importance in the aggregate, are only moderately busy. Before the war Chinese iron was obtainable, delivered at $4 a ton below the Colorado product, and the Tata Iron & Steel Company, Calcutta, also sold to this territory. Belgian steel bars were obtained at prices that correspond to less than 0.90c., Pittsburgh. There are no signs as yet of building work.

The Washington Steel & Iron Company, which has an office in the Eagle Block, Spokane, is at work developing a method of smelting iron ore at Leavenworth, Washington, with the use of oil as fuel. It had planned to reduce ore by the E. H. Rothert process but the secretary-treasurer of the company, O. P. Moore, says this was not successful. It appears that a continuous process is to be attempted with a furnace combination of 25 tons daily capacity. M. A. Conner, coal dealer, is president and E. K. K. Allen, real estate, is vice-president. W. W. M.

STEEL TRADE STATISTICS, 1914

Production of Structural Shapes, Wire Rods and Nails in United States

Special statistical Bulletin No. 3 of the Bureau of Statistics of the American Iron and Steel Institute, has just been issued by William G. Gray, statistician in charge. It gives the statistics of the production in the United States in 1914 of structural shapes, wire rods and wire and cut nails. Extracts are taken as follows:

STRUCTURAL SHAPES

Prior to 1912 the output of heavy structural shapes was not separated from the output of light shapes. The figures given for heavy structural shapes for 1912, 1913 and 1914 include all beams, tees, zee bars, angles, channels, etc., having one leg or web of 3 in. and over which were rolled for structural or fabricating purposes, while the figures given for light structural shapes include only such light shapes and small angles, etc., as were rolled for use in the manufacture of bedsteads, agricultural implements, fences, safes, vaults, or for other fabricating purposes having a section smaller than is provided for in the heavy structural classification. The production of girders made from plates, bars for reinforced concrete, sheet piling, etc., is not included in any of the figures given for structural shapes, the totals of which are as follows for the past three years, in gross tons:

Years	Heavy shapes	Light shapes	Total
1912.....	2,470,415	376,072	2,846,487
1913.....	2,553,806	451,166	3,004,972
1914.....	1,787,281	243,843	2,031,124

All the heavy structural shapes were rolled from steel.

In 1914, 41 works in 10 States rolled heavy or light structural shapes, namely: New York, 2; New Jersey, 2; Pennsylvania, 22; Alabama, 1; Ohio, 3; Indiana, 3; Illinois, 4; Wisconsin, 1; Colorado, 1, and California, 2. In 1913 40 works in 11 States rolled structural shapes. Pennsylvania made over 73.5 per cent. of the total production in 1914, against over 71 per cent. in 1913.

WIRE RODS

Iron or steel wire rods were rolled in 1914 by 37 works in 12 States, as follows: Massachusetts, 1; Rhode Island, 2; New York, 3; New Jersey, 3; Pennsylvania, 12; Kentucky, 1; Georgia, 1; Alabama, 2; Ohio, 6; Indiana, 2; Illinois, 3, and Colorado 1. In 1913 37 works in 12 States rolled wire rods. In 1914 Pennsylvania rolled over 45 per cent. of the total production, against over 44.1 per cent in 1913.

Small quantities of copper-clad steel wire rods are included in the totals for recent years. It was necessary to estimate the output of one wire-rod plant in 1914. The totals for the past three years are as follows, in gross tons:

Years	Iron	Steel	Total
1912.....	1,289	2,652,264	2,653,553
1913.....	832	2,463,975	2,464,807
1914.....	731	2,430,983	2,431,714

WIRE AND CUT NAILS

In 1914, wire nails were made by 50 works in 15 States, as follows: Massachusetts, 3; Rhode Island, 1; New York, 2; Connecticut, 1; New Jersey, 1; Pennsylvania, 12; Maryland, 1; Kentucky, 1; Georgia, 1; Alabama, 2; Ohio, 7; Indiana, 5; Illinois, 9; Wisconsin 3, and Colorado, 1. In 1913 wire nails were made by 51 works in 15 States. Five wire-nail plants were idle in 1913 and 1914.

Fourteen works in 8 States made cut nails in 1914, as follows: Massachusetts, 2; Pennsylvania, 5; West Virginia, 2; Kentucky, 1; Ohio, 1; Indiana, 1; Illinois, 1, and Wisconsin 1. In 1913 there were 16 works in 8 States which made cut nails. Six works were idle in 1914, against 8 works in 1913. Horseshoe nails, cut tacks, wire nails, or railroad or other forged iron or steel spikes are not included.

Steel wire nails only were made in 1913 and 1914. It was necessary to estimate the output of a few plants. In 1914 Pennsylvania produced 6,210,832 kegs, or over 47.2 per cent. of the total, against over 49.4 per cent. in 1913. The output for the past three years was as follows, in kegs of 100 lb.:

Years	Cut nails	Wire nails	Total
1912.....	978,415	14,659,700	15,638,115
1913.....	842,038	13,559,727	14,401,765
1914.....	769,665	13,132,814	13,902,479

A NEW VANADIUM STEEL

Annealed Carbon-Vanadium Product to Replace Heat-Treated Forgings for Locomotives

To meet the requirement for a steel of greater strength for locomotive axles and forgings, the railroads in the past have turned to heat-treated carbon and heat-treated alloy steels, particularly chrome-vanadium steel. In the former, heat treatment has caused an increase of 20 to 25 per cent. in elastic limit over the annealed steel, but in chrome-vanadium axles an increase of 100 per cent. in elastic limit over the same steel annealed is specified and obtained by heat treatment. The relative cost of chrome-vanadium forgings is high, however, and can be only partly offset by taking advantage of the greater strength to reduce the section and weight. Lack of heat-treatment equipment has been one obstacle to the adoption of heat-treated forgings in railroad shops, particularly in repair work.

In view of the reduced cost of vanadium in the past year the American Vanadium Company resumed the investigation and study of the application of vanadium to simple carbon forging steels, which was dropped about 12 years ago. As a result the company has developed a type of carbon-vanadium steel which without heat-treatment other than annealing meets the requirements specified for heat-treated simple carbon steel forgings of like section. These results are obtained, it is stated, from steel with lower carbon than is generally used to obtain the physical requirements for heat-treated carbon steel locomotive axles and forgings. The cost of this steel is only a little higher than simple carbon steel.

In the table which follows are given results of tests on axles and connecting rod forgings from this new type of steel. The method of annealing recommended

Table of tests of simple carbon-vanadium steel.

ANALYSIS: C. 0.47; Mn, 0.90; P. 0.012; S 0.020; V. 0.15 per cent

Description	Treatment	Yield point, lb. per sq. in.	Elastic limit, lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation in 2 in., per cent.	Reduction of area, per cent.
7-in. axle	Natural.....	71,200	68,000	123,000	16.0	30.0
7-in. axle	Annealed 1450 deg. F...	56,000	52,000	90,000	24.0	50.0
7-in. axle	O. Q. 1600; T. 1160 deg. F.....	85,000	82,000	112,500	22.0	55.0
11-in. axle	Natural.....	75,000	70,000	117,000	16.0	28.5
11-in. axle	Annealed 1450 deg. F...	58,000	54,000	94,000	22.0	47.0
11-in. axle	O. Q. 1600; T. 1160 deg. F.....	87,000	80,000	115,000	20.5	52.0
Connecting rod	Natural.....	92,000	85,000	131,000	17.0	44.0
Connecting rod	Annealed 1450 deg. F...	71,500	67,000	105,000	23.5	52.0
Connecting rod	O. Q. 1600; T. 1160 deg. F.....	92,500	86,000	123,000	20.5	50.0

is to heat the forgings uniformly at a temperature of 1425 to 1475 deg. F., remove them from the furnace and allow them to cool in the air, protected from strong drafts and rain or snow.

Where still higher results are desired than can be obtained by annealing they can be obtained from this carbon-vanadium steel approximating those secured from the more expensive alloy steels. The heat treatment recommended for this is to heat the forgings uniformly to about 1600 deg. F., and quench in oil. In case water is preferred as a quenching medium, the temperature should be about 1550 deg. F. The forgings should then be drawn back or tempered by heating to 1100 to 1150 deg. F.

United States Steel Corporation Wins Its Suit

CIRCUIT COURT OF APPEALS REFUSES TO DISSOLVE OR ENJOIN

Integration and Not Monopoly Was the Purpose of Those Who Formed the Consolidation—The Gary Movement Held Illegal—Promoters of the Corporation, One Opinion Says, Did Not Succeed in Their Monopolistic Aim

A decision was handed down at Trenton, N. J., on Thursday, June 3, in the United States district court for the district of New Jersey refusing the petition of the United States Government to dissolve the United States Steel Corporation. The decision was unanimous, but Judge Buffington, who wrote the opinion, said in its opening sentence that the members of the court were "not in complete accord concerning every step by which that result was reached."

Besides refusing to dissolve the Steel Corporation the court refused to grant an injunction, as asked for by the Government, against any of the corporation's operations or practices. It said, however, that if the Government so moved it would retain the bill of complaint for the purpose of restraining anything like the "Gary movement" which might be contemplated by the defendants hereafter.

The decision was received with marked approval throughout the country. Comments of the press were to the effect that it pointed to the closing of the era of indiscriminate attack upon big business; that it went far toward relieving business men of uncertainty as to things they may lawfully do, and that it did much in emphasizing the principle that mere size is not the test of monopoly and trade restraint.

Heads of steel companies and other manufacturing corporations and representatives of financial and trade interests united in saying that the decision is of vast consequence, in putting cheer into business and in aiding in the forward movement which has so long been awaited in domestic trade.

Chairman E. H. Gary, of the Steel Corporation, in expressing his gratification said: "I feel that this decision approves the general policy of the Steel Corporation. It should have a great and good effect upon business conditions throughout this country."

Judges Buffington, McPherson, Woolley and Hunt sat in the Steel Corporation case. The suit was filed in the district court at Trenton, but was heard on a writ of expedition by the judges of the Third Judicial Circuit, who form the Court of Appeals. The next step in the case will be the filing of a formal decree and the Government, as Attorney General Gregory has stated, will then take an appeal to the Supreme Court. The opinion of the senior judge, Joseph Buffington, in all of which Judge McPherson concurs, while Judges Woolley and Hunt concur in its conclusions though not in all of its reasoning, takes up 141 printed pages. The other opinion, written by Judge Woolley and concurred in by Judge Hunt, is stated in 22 pages.

WAS COMPETITION UNDULY RESTRICTED OR TRADE UNDULY OBSTRUCTED?

In the beginning Judge Buffington quotes from a late decision of the Supreme Court [in Nash vs. United States] the following, referring to that court's former decisions, clearly defining what the Sherman act forbids and does not forbid:

> These cases may be taken to have established that only such combinations are within the act as by reason of intent or the inherent nature of the contemplated acts prejudice the public interests by unduly restricting competition or unduly obstructing the course of trade.

Taking this as the test of illegality the opinion says:

> Applying the foregoing definitions of the Supreme Court to the case in hand, the basic question for us to determine is one of fact, namely, whether the union of the several defendant companies in the United States Steel Corporation prejudices the public interests by unduly restricting competition or unduly obstructing the course of trade.

The court then says that the public interests thus prejudiced consist, first, of competitors in trade; second, the purchasing public, and third, the general public. The court says the facts to be determined in the present case are:

> 1. Was the Steel Corporation, when this bill was filed in 1911, prejudicing the public interests by unduly restricting competition or unduly obstructing the course of the steel and iron trade between the States or with foreign nations? If this question be answered yes, the law was then being violated and an injunction should issue to restrain present and future violations.
>
> 2. Did the Steel Corporation, when it was formed in 1901, either by the intent of those forming it or by the inherent nature of that company's contemplated acts, prejudice the public interests by unduly restricting competition or unduly obstructing the course of the steel and iron trade, interstate or foreign? If this question be answered yes, then the law was violated and the Steel Corporation must be judged originally illegal. If illegal, it must be dissolved, because only thus can its inherent nature be prevented from continuing to work further violations of the statute.
>
> On the other hand, if these questions are negatived, then the Steel Corporation should not be dissolved, but permitted to pursue that usual course of trade which it was the purpose of this statute to protect. It will thus be seen that this case is practically one of business facts.

OTHER COMPANIES INCREASED THEIR PERCENTAGE OF OUTPUT MUCH MORE

Passing to the discussion of the domestic trade of the Steel Corporation Judge Buffington traced the growth of competition between 1901, when the corporation was formed, and 1911, when the suit was brought, taking up the leading companies in turn and detailing their

expansion. Taking finished rolled products as the basis, he showed that in 1901, with 13,000,000 tons of such products turned out in the United States, the corporation made 50.1 per cent. and its competitors 49.9 per cent. In 1911 the total was 19,000,000 tons, of which the Steel Corporation made 8,700,000 tons, or 46 per cent., and its competitors 10,300,000 tons, or 54 per cent. Taking only steel used in the trade of the United States and leaving out exports, the competitors' share in 1911 was 60 per cent. These facts and figures, the court held, showed "a strong trend away from any monopolistic absorption or trade-restraining control of iron and steel manufacture or markets of the United States by the Steel Corporation."

On the contrary, these figures show a strong trend in that manufacture and market toward an even greater absorption thereof by the virile and growing competitors of the Steel Company. And this leads us, in an adequate discussion of the case, to take up at this point the character of the competition in the steel and iron business in this country, for we may rest assured of the practical fact that where in any business there exists a healthy, normal, unrestrained and virile competition, which all are free to enter, the individual has full freedom of business opportunity and the public is in no danger of prejudice from monopoly or trade restraint.

While the Steel Corporation's gain in production between 1901 and 1911 was 40 odd per cent., the increase in other companies' output was much greater, taking figures for 1901 and then for 1912 or 1913 (those of the Lackawanna Steel Company only being for 1911). The other increases were: Republic, 90 per cent.; Lackawanna, 63; Colorado Fuel, 152; Cambria, 155; Jones & Laughlin, 206; La Belle, 463; Inland Steel, 1495, and Bethlehem, 3779. "Taking up these companies, one by one, it will be seen that in location, facilities, capital, and basic supplies they show such past, present, and prospective competition as affords just ground for concluding that the steel and iron business of this country is not being and, indeed, cannot be monopolized, for the real test of monopoly is not the size of that which is acquired, but the trade power of that which is not acquired."

TESTIMONY OF COMPETITORS AND CONSUMERS SHOWS KEEN AND CONTINUOUS COMPETITION

In discussing the policy of the Steel Corporation as to prices and its competitors, the court found no complaints of the use of freight rebates to undermine competitors, nor did it find that ruinous trade wars had been waged against competitors to establish monopoly. Much testimony in the trial was given by competitors of the Steel Corporation and by a great variety of consumers.

We have carefully and patiently studied the voluminous testimony bearing on the general course of all branches of the steel trade covering the whole time the Steel Corporation has been engaged in such trade. The testimony covers proofs by its manufacturing competitors in all branches, and also the different classes of customers whose trade it and its fellow-competitors seek. It is apparent that among this latter class—that is, the consumers of its product—we would naturally find evidence of any throttling of competition or any undue restraint of the steel trade.

No one can read the testimony and fail to be satisfied that this great body of business men, scattered over all parts of the country, in keen competition with each other in their several lines, is alert in seeing that competitive conditions exist between the manufacturers of basic steel products from whom they buy, and the sworn testimony of these men, who are vitally interested in the maintenance of real competition between the Steel Corporation and its manufacturing competitors, that such real competition does exist and has existed during the past ten years, cannot but carry a conviction that such is the case.

A study of the testimony of these men, who are close to and vitally interested observers of the prices of these products, shows that a single large concern, by lowering the price of any substantial steel product it sells, can depress the obtainable price. It further shows that the converse is not the case; that no single large concern, by raising or even maintaining the price of any substantial steel product, can raise the obtainable price.

The court was satisfied that the strong trend of the steel business at the close of the last century was toward driving competitors out of business by cutting prices and that the business policy inaugurated by the Steel Corporation and in which its competitors subsequently followed resulted in the first ten years of its existence, first, in a more general division of business between all competitors than under the old system; second, in tending to minimize the shutting down of its own and its competitors' plants in time of depression; third, in making steel products non-speculative and therefore benefiting all dependent iron and steel manufacturers by enabling them to have a steady non-speculative supply of those basic steel products on which their plants depend for operation.

FOREIGN TRADE BUILT UP IN LAWFUL WAYS—BIGNESS NOT AN ISSUE

Passing to the consideration of the foreign trade of the Steel Corporation, the opinion shows from the testimony that there was no monopolization or restriction of foreign trade by taking away from others foreign trade already existing or by restraining others from entering it. The great difficulties attending the establishment of an export trade in American steel products were discussed at length. Previous to the entrance of the Steel Corporation upon such trade the iron and steel exports from the United States consisted of "dumped" material, steel being unloaded at low prices on foreign markets when the American market was over-supplied. Of the Steel Corporation's $91,000,000 of foreign trade in a year, the opinion says, $30,000,000 was done in conjunction with 158 other American concerns, these companies making articles the Steel Corporation did not make but getting their basic supplies for making them from the corporation. The conclusion drawn from the detailed consideration of the foreign trade was that the Steel Corporation's mode of building it up and of retaining it are not contrary to the Sherman law.

Much attention was given by the court to the corporation's export trade because the Steel Corporation contended that the building up of a foreign steel and iron trade was one of the controlling reasons that led to its formation, and not a purpose to restrain or monopolize interstate home trade.

"If foreign trade cannot be increased without some such mechanically varied and financially strong agency as this Steel Corporation, then manifestly such agency is not a violation of a statute whose purpose was to permit—not to prevent—the normal, natural and to-be-desired development of unrestrained, unmonopolized trade, both foreign and domestic. In taking up this question, we dismiss once and for all the question of mere volume or bigness of business. The question before us is not how much business was done, or how large the company that did it—the vital question is, how was the business, whether big or little, done—was it, in the test of the Supreme Court, done by prejudicing the public interests, by unduly restricting or unduly obstructing trade? The question is one of undue restriction or obstruction of trade, and not of undue volume of trade. If mere size were the test of monopoly and trade restraint, we have not one but a half dozen unlawful monopolies in the large department stores of a single city."

THE PURPOSE OF PROMOTERS WAS TO INTEGRATE, NOT MONOPOLIZE

Much space is given in the opinion to the question whether the Steel Corporation was formed in order to monopolize or restrain trade. The court canvasses with care the testimony given by Judge Gary, Charles M. Schwab, James H. Reed and Robert Bacon as to negotiations in which J. Pierpont Morgan was particularly concerned preceding the formation of the corporation. The theory developed for the defense was that steel making had at that time reached the limit of improvement in metallurgical methods and that further advance, including the development of a foreign trade, was dependent on integrating processes. Government counsel had argued that this whole talk of integration or rounding up of manufacturing facilities was an afterthought and a mere cloak to veil a purpose to monopolize trade. The testimony of those who took part in forming the Steel Corporation was that monopoly of the steel and iron trade was not the purpose for which it was formed. The court makes four points in this connection:

1. That with the competition left outside of the Steel Corporation, the extent of which has already been shown, a monopoly of the steel and iron business of the United States was simply impossible, and that no effort was made to secure these companies.

2. That in view of the fact that the proportionate volume of competitive business has increased since the steel company was formed and that the proofs show no attempt by it to monopolize it to the exclusion of its competitors, to now attribute to those who formed the corporation an intended monopolization, would be to say that, having formed the corporation for the purpose of monopoly, they immediately abandoned such purpose and made no effort to accomplish it.

3. That the publicity which the proof shows the steel company has from time to time made of its prices, its accounts and its policies, would seem a practice in line with legitimate business, rather than with illegal monopolization.

4. That in carrying out the plan the advice of Abram S. Hewitt was taken by Mr. Morgan and at the latter's request Mr. Hewitt went on the board and served until his death, is a fact which, in view of the high character of Abram S. Hewitt, tends to negative the contention that the purpose in view was to violate the law.

Judges Buffington and McPherson appeared quite willing to accept the view that the plan of rounding out the Federal Steel Company by securing various finishing companies (consolidations then existing) was the main moving cause of the formation of the Steel Corporation. They considered that the proof fairly showed that "without the acquisition of each of the finishing companies named, viz., the American Steel & Wire, the National Tube, the American Bridge, the American Steel Hoop and the American Sheet Steel, the Federal Steel Company, even with the acquisition of the Carnegie, would not have been provided with adequate finishing facilities for consuming its sub-basic product."

NO IRON ORE MONOPOLY—THE TENNESSEE COMPANY PURCHASE

Some attention was given in the opinion to the purchase of the Union Steel Company's plants. These the court finds were "needed to carry out the general unification problem of the Steel Corporation." The purchase of the Clairton Steel Company is justified on financial grounds as it relieved the Crucible Steel Company of a "large and threatening collateral liability." In connection with the Great Northern ore lease the question of ore monopoly is discussed, and the court finds that several competitors of the Steel Corporation have reserves that will last longer than those of the corporation, and that experienced witnesses have shown that adequate ore reserves can be had by new companies.

The findings on the Tennessee Company purchase are as follows:

That at the time the steel company bought the Tennessee Company the latter's production of iron and steel was 1.7 per cent. of the production of the country; that up to that time the Tennessee Company had not been a business success; that it was making rails, which was its principal steel product, at a loss; that its ultimate success was problematic; that such success involved an outlay of upward of $25,000,000 to put it on a dividend basis; that it had never really earned any dividends up to the time of its sale; that the whole testimony shows its relation as a successful substantial competitor with the steel company in the volume of its business, the character of its product and the breadth of its market, was negligible. We are warranted by this testimony, and find the fact to be that its purchase by the Steel Company in no way tended to monopolize the steel and iron trade, and that it was not bought with the purpose or intent of monopolizing, or attempting to monopolize or restrain that trade.

THE GARY MOVEMENT AMOUNTED TO AN UNLAWFUL COMBINATION

The "Gary Dinners" figure in the opinion in an important way. The conclusion of the court is thus stated:

To our minds the testimony taken as a whole makes the conclusion inevitable that the result of these meetings was an understanding about prices that was equivalent to an agreement. We have no doubt that among those present some silently dissented and went away intending to do what they pleased, but many, probably most, of the participants, understood and assented to the view, that they were under some kind of an obligation to adhere to the prices that had been announced or declared as the general sense of the meeting. Certainly there was no positive and expressed obligation; no formal words of contract were used; but most of those who took part in these meetings went away knowing that prices had been named and feeling bound to maintain them until they saw good reason to do otherwise and feeling bound to maintain them even then until they had signified to their associates their intention to make a change. We cannot doubt that such an arrangement or understanding or moral obligation—whatever name may be the most appropriate, amounts to a combination or common action forbidden by law. The final test, we think, is the object and the effect of the arrangement, and both the object and effect were to maintain prices, at least to a considerable degree.

The court believes the participants in the Gary movement did not intend to act illegally, and while it thinks they were mistaken it acquits them of trickiness or attempted evasion.

REPETITION OF GARY MOVEMENT WOULD BE RESTRAINED

In conclusion the opinion says:

But the period of co-operation had passed away before the bill was filed, and as far as we can see it is not likely to be repeated. We do not think the Gary movement would justify us in imposing so drastic a penalty as the dissolution of the corporation, but we will, if the Government moves for such action, retain the bill for the purpose of restraining any similar movement by the defendants that might be contemplated hereafter. We may perhaps suggest that under recent legislation Congress may have provided a sufficiently inclusive remedy for any future action that might have for its object the adoption or the maintenance of unreasonable prices.

In brief, the conclusions of the court are these. As to some of the defendants, it is apparent the bill should be dismissed. Concerning the principal relief sought against the corporation and its subsidiaries, we are of opinion that the Government has not made out a case

(Continued on page 1321)

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The Decision in the Steel Case

Probably no more popular decision has been given by a high court in many days than that which Judge Buffington handed down last week in the Steel Corporation's suit. Competitors of the Steel Corporation approved of it, as did many of the corporation's customers. If newspaper comment represents public opinion, the public also is well satisfied. Less than three years ago a president of the United States said from more than one platform that the purpose of his administration in its trust prosecutions was to "restore old-fashioned competition." This was generally understood at the time to mean the breaking up of consolidations into small and necessarily weak units, and that if competition caused the death of any of them there would be satisfaction, at least, in the fact that the old-time régime had been restored.

The decision in the steel case means that strong corporations are not to be broken up because they are great. It also means that business men may count with more confidence than at any time in ten years on being allowed to develop large enterprises without fear of being attacked as lawbreakers. The Northern Securities decision of 1904 seemed to point to the disappearance of the holding company as part of the machinery of modern business. In later decisions of the Supreme Court interpretation of the Sherman law has progressed to the point of making conduct rather than power, whether exercised or unexercised, the test of restraint of trade. On conduct the decision in the steel case largely turns.

The attorneys for the Government concentrated their attack upon practices which, as the evidence showed, the Steel Corporation had abandoned. Their discontinuance was the chief ground of the court's refusal to dissolve the corporation or to issue any injunction against its operations. Judge Buffington and his associates have followed carefully in their opinion the Supreme Court's construction of the Sherman act as given in the Standard Oil and Tobacco cases, defining the unlawful restraints and monopolies which the act enjoins and makes criminal. That fact and the unanimity of the decision just given argue strongly for its affirmation in due time by the highest court.

The decision of last week, in saying prominently that mere volume or bigness of business is not an issue under the Sherman act, only re-emphasized one feature of the decisions of 1911; and even the district court decision of last year at St. Paul in the Harvester suit, while against that corporation, was careful to say that there is no limit to which a business may not independently grow, while even a combination of two or more businesses, if it does not unreasonably restrain trade, is not unlawful.

It is evident from a careful reading of the Trenton decision that there would have been no unanimous finding for the Steel Corporation had not its conduct been better than the purposes of its promoters or had the Gary plan of co-operation been operative at the time the suit was brought in 1911. The Steel Corporation has improved with age, and the wisdom of its management has gone far toward curing what was most criticised in its putting together and in its earlier career.

In the separate opinion of Judge Woolley the record of the Steel Corporation is referred to as "conspicuously free from that business brutality, meanness and unfairness which characterized the conduct of certain large corporations found guilty of violating the anti-trust law." No other corporation on trial for its life has ever been able to marshal such an array of competitors and customers who spoke well of it.

The court divided two and two on the question whether monopoly or undue restraint of trade was aimed at in the organization of the Steel Corporation. The euphemism of "integration" was accepted on the one hand—the view that the necessity had developed, steel making "having reached the limit of improvement in metallurgical methods"(!), for manufacturing steel products on a large scale, beginning with ore and concluding with finished products, and hence aggregations of mills that produced different commodities were essential. The view of Judges Woolley and Hunt, and the one which agrees best with what was done and said at the time by the Steel Corporation promoters, is that "properties were assembled and combined with less regard to their importance as integral parts of an integrated whole than to the advantages expected from the elimination of the competition which theretofore existed between them."

It will surprise a good many attendants upon the Gary dinners to find that the gravamen of the Steel Corporation's offending, in the minds of all four judges, was in connection with that movement. It resulted in an understanding on prices that "amounts to a combination or common action for-

bidden by law," according to the main opinion. In the concurring opinion the offense of the corporation, in connection with these meetings "was not its dominancy over the trade, but an offense precisely similar to that of which every independent and co-operating producer was guilty and consisted in the act of combining with its competitors to produce an unlawful result." That there may be no repetition of this co-operation the court stands ready to issue at any time a restraining order.

As a hint of the Federal Trade Commission's part in such movements in the future, Judge Woolley's opinion says that "if the establishment of uniform prices for the products of an industry should ever be found advantageous or necessary, such an economic policy should be inaugurated and pursued under authority of law and not by the will of the industry."

After all has been said of the great boon the decision has been to business, what has it really conferred upon the Steel Corporation? How much more than simply the right to live and live carefully? Here is the greatest corporation in the world, one whose coming many viewed with alarm, but where is one that has less power to turn to the right or to the left to carry out its own will, as against that of any related interest? It has had to be all things to all men—the servant of its competitors, its customers, its employees and the public. The dream of power and of huge profits that fired the imagination of its promoters and the investing public in the consolidation days is gone.

There is no problem of trust menace in the steel industry. Rather the problem is, with the competition built up since the great consolidation, and under the restrictions of contemporary legislation, how a reasonable and continuous profit can be secured for investors in the industry. The Steel Corporation's method of solving this problem for itself and its competitors has now been pronounced illegal. The finding of a legal and adequate solution remains a matter of the highest concern to every producer and manufacturing consumer of steel.

Backsets for "Trust Busting"

The prompt decision of the Attorney General, after a conference with the President and his entire Cabinet, to ask the United States Supreme Court to review the verdict, adverse to the Governmen, of the Federal District Court for New Jersey in the case of the United States Steel Corporation, reflects an extraordinary situation in which the Department of Justice finds itself and the appreciation by the administration of the political aspect of the pending prosecutions directed against "big business."

The Government's contentions regarding the proper construction of the Sherman law have been rejected by Federal courts of high standing in no less than four important cases since the beginning of the present year. In only one of these cases has the Department of Justice actually perfected an appeal to the United States Supreme Court. The cases include actions against the National Cash Register Company, including the criminal prosecution of its officers; the United Shoe Machinery Company, the Keystone Watch Case Company and the United States Steel Corporation. In the proceeding against the National Cash Register Company, decided by the lower court adversely to the Government, an application to the Supreme Court for a writ of certiorari has already been made, but the case has proceeded no further.

The adverse ruling of the lower court upon the Government's petition for dissolution in the case against the United Shoe Machinery Company was a severe blow to the Department of Justice, which had confidently counted upon a decisive victory that would foreshadow an even more important triumph in the case against the International Harvester Company. The court's analysis of the Government's contentions amounted almost to an arraignment of the department. No action has been taken on this case beyond a brief notice that an appeal will be taken. The Government has one year from the date of the decision in which to perfect its appeal.

The decree in the Keystone Watch Case Company's case was handed down by the Federal District Court in Philadelphia on the day following the decision in New Jersey of the United States Steel Corporation's case, although the original decision, adverse to the Government, was rendered January 2. In this case, which has attracted less attention than its importance deserves, the court holds that the defendant corporation was not organized in violation of the Sherman anti-trust law and, therefore, should not be dissolved. Certain minor practices with regard to the maintenance of prices are enjoined by the decree, but the decision as a whole is distinctly adverse to the policy of the Department of Justice. No decision as to an appeal in this case has yet been announced, but the Government has until August 4 in which to give notice of its intention to carry the case up.

In each of the four cases referred to the announcement of the court's decision has been hailed throughout the country as a harbinger of better times. Not only have these rulings against the Government boomed securities of all classes on the stock exchanges, but business men everywhere, whether engaged in the conduct of big corporations, or in the management of small competing concerns, or independent lines not directly affected, have seemed to feel that the denial of the Government's petitions to dissolve great industrial combinations foreshadows a new order of things and a return to prosperity. Whatever basis there may be for this demonstration and however fallacious the public view of the matter, the administration now finds itself obliged to face a situation which, unless handled with great skill and diplomacy, promises to have a most important influence upon the next national elections.

It has been made clear that, without regard to party, the people are tired of "trust busting." The leaders of both parties have indulged in the baiting of big corporations, for it must be remembered that all the cases recently decided by the courts were begun under the previous administration. With honors so even between the two great political parties on this important issue, the question giving the present administration deep concern is the policy to be pursued in the future, for it is as to this policy that exclusive responsibility must now be shouldered.

The only crumb of comfort which the Department of Justice has been able to derive from the execution of its anti-trust policy has been the decision in its favor in the lower court in the case of the International Harvester Company. This has been largely offset, however, by the fact that, according to the Attorney General, this case is on all fours with that of the United States Steel Corporation, which, of course, renders the New Jersey verdict all the more disappointing to the Government's law officers.

Structural and Wire Output in 1914

Statistics are useful in giving one a perspective. The calendar year last past has left the impression of an utterly wretched year in the steel trade, and if the ordinary observer were asked to analyze he would probably say that while it was a bad year in all branches of the steel trade, it was worst of all in rails and structural shapes. The rail statistics published a few weeks ago confirm that view as to rails, but the statistics of structural shape production just made public, as printed in this issue, do not suggest that the year was such an extremely bad one in that department. The tonnage, as a matter of fact, was slightly larger than that of 1907, a very good year in its time and a year in particular that was supposed to be marked by an unusually large amount of new construction. It was about 5 per cent. less than the output in 1906, which was a better structural year than 1907.

The total of large and small structural shapes rolled in 1914, 2,031,124 gross tons, showed a decrease of almost one-third from the record production of 3,004,972 tons, made in 1913, but a material part of that decrease was due to a falling off in exports from 403,264 tons to 182,395 tons, so that the decrease in apparent consumption was only 29 per cent.

The steady branch of the steel industry, of course, is the wire trade. Between one-fourth and one-third of all the wire produced is converted into nails, and the consumption of nails as well as of the great majority of wire products is dependent in but small degree upon general business prosperity. If one has a different perspective than this, the statistics will set him right, for in the past 14 years the production of nails in the poorest year has been only 17 per cent. less, and the production in the best year has been only 17 per cent. greater, than the mean production. A comparison of apparent consumption, deducting the exports, shows precisely the same percentage. For such a comparison cut nails are properly included with wire nails, for the production of cut nails, rather small 14 years ago, has decreased further since then. The stability of the wire rod industry has not been marked by unchanging production, but by a remarkably uniform increase. In fact, the poorest year falls but 6 per cent. below, and the largest year but 13 per cent. above, the tonnage that would have been produced in those respective years had precisely the same percentage increase occurred from each year to the next. The year that showed the abnormally large production of rods was 1912, with 2,653,553 gross tons, 1913 showing a decrease from this of 6 per cent., while 1914 has shown a drop of one per cent. more.

Native American Labor Emigrating

In the consideration of the immediate future of the labor supply of the United States, especially the supply of skilled labor, there now enters the accentuating element that good men are being tempted by large wages to transfer their services to works in Great Britain, and on a still larger scale inducements are being offered by Canadian plants. Already mechanics in not inconsiderable numbers have sailed for England, and others have been engaged for this employment, according to what appears to be reliable authority; and there is no doubt that many of this class of men—at the moment, speaking from the standpoint of manufacturing, the most desirable of all our artisans—have been employed by Canadian shops which are rushing through materials for the Dominion troops and otherwise for the British empire. The United States is losing the Europeans who, were world conditions normal, would now be flocking here; it is also losing many of its workmen who are returning to their own countries to fight. In addition to all of these many of our own people are leaving. The latter group constitutes no great factor, but it serves well to emphasize the folly of the alien contract labor law of the United States, which makes it a serious offence under the penal code for an American manufacturer to secure from abroad, under contract, the services of a foreigner. The owner of an American machine shop cannot go to Canada, or send an agent, to seek labor under advantageous conditions. He cannot advertise for men there; at any rate he cannot accept the services of a mechanic secured in such a manner without assuming the risk of prosecution by the Federal government. To make another illustration, at the present time it might prove profitable to have representatives in Sweden contracting for the services of skilled metal workers of various classes, but it would be dangerous to do so under our laws.

It is an anomaly to maintain a barrier against the American manufacturer, and indirectly against the American public, which does not work the other way around. At the present time Englishmen are contracting for the skill of American mechanics, but the manufacturer here cannot contract for the services of expert English weavers without liability to serious punishment, as has been proved in the decisions of the United States courts.

The fact should never be lost sight of, in the discussion of the labor problem, that the busier a shop is, the greater the loss to owners because of what may be termed transient employment—the skilled men of nomadic tendencies and the men who do not measure up to the requirements of the work for which they are needed, who are coming and going all the time. In dull times this condition is relatively unimportant, but when business is good it is a factor which must be taken into account seriously in reckoning overhead expense. We mention this as one of several sidelights on the question of the supply of labor which promises to become a serious problem.

The alien contract labor was a sop to the labor vote. The conditions prompting its passage have changed completely. Under a situation like today's, legislation should be passed suspending its operation.

DENVER INDUSTRIAL OUTLOOK

Slackness in Iron and Steel — Colorado Mill's Good Year in Wire

(*Special Correspondence.*)

DENVER, COL., June 4, 1915.—Were it not for buying of wire and wire products by the farmers and the re-equipping of beet sugar refineries, iron and steel business in Denver would be flat. In general it is none too good, but it has shown a betterment along with the rest of the country, gradual though this has been. One of the indications of more active times is the greater difficulty of securing skilled labor, as for machine shops. In some cases provisional engagements of mechanics east of Chicago have not been filled because the workmen in the meantime secured employment in their home localities.

Railroad buying of steel or of machinery for shops has been light and there is no promise of a change. Roadbed conditions appear good and there is nothing under consideration at present in rails. Nor are there bridge material inquiries. Building operations are light and for but small structures and the present offers nothing attractive in structural steel or even in reinforcing bars. Locally mines are not buying, making use instead of present equipment repaired to the extent necessary. The increased demands for metalliferous products are being met in part by operating mines for a long time idle. Movement of irrigation equipment, including pumps and metal flumes and piping, is fair but disappointing, in view of the admitted prosperity of the farming communities.

Denver has not yet attained to the proportions of a manufacturing community for the density of population does not encourage manufacturing more or less standard articles at present supplied from the east under freight charges, which it is here asserted have been diminished in steps. These changes have sometimes been to the lasting detriment of local industry which was promoted in part under the expectation of freight protection. In some special cases, but not in iron or steel lines, it is believed, general manufacturing seems to prosper owing to local conditions which make it possible to maintain prices based on those of the distant metropolitan centers. Some of the most successful industrial projects are those focusing on a patented specialty, and in this class may be mentioned the Denver Rock Drill Manufacturing Company, which is working full time and with full force and shipping over half of its rock drills outside the country, to places as distant as South Africa.

The good demand for wire has resulted in giving the Colorado Fuel & Iron Company the best year it ever had in this line but, of course, prices have been low. The considerable foundry and machine work for the sugar makers cannot be counted on for long, as it represents extensive repair work deferred at the time of the sugar tariff agitation rather than expansion of the beet sugar industry.

Little definite expression could be obtained regarding what the immediate future will bring out. In some quarters it is believed that betterment will not occur before there is a change in the administration, with a revision in the tariff. W. W. M.

Pressed Steel Building Construction Members

The Trussed Concrete Steel Company, Detroit, Mich., has developed a type of building construction in which pressed steel beams and studs are used in conjunction with its Hy-Rib lathe. These members are designed for use in small structural steel buildings and also in connection with multiple or group houses for mines and industrial plants. Their use eliminates wood, timber and lath and is said to require less than half the time and labor necessary for erecting a wooden structure. A large variety of beams, channels, rafters, plates, studs, etc., are manufactured, each of them in many sizes. These members are cut to standard lengths, and the use of standard connections does away with all punching, riveting and bolting.

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The Tungsten Situation

The rapid advance in the price of tungsten, either as the powdered metal or as ferrotungsten, is causing some concern in the tool steel trade, to which it is a vital necessity. Before the war it was selling at about 60c. to 70c. per lb., and now is reported at $1.50 to $1.60, with a possible further advance as the war continues. The present tight situation is due to several causes. The German production is entirely shut off and countries producing tungsten ores have either placed an embargo on their shipment or are unable to ship for other reasons. Portugal produced one-seventh of the world's output of ore in 1912, and the recent political upheaval there is assigned as a cause for an increase in the price of the ore. It is not surprising, therefore, that importers and manufacturers using foreign ores are hard put to do any business in this product. The total world's output in 1912, the latest statistics available, was 9654 net tons of concentrates containing 60 per cent. of tungsten trioxide (WO_3), of which Burma and the Shan States produced 2095 tons; Portugal, 1466 tons and the United States, 1330 tons. The output in 1913 in this country was 1537 tons, the largest recorded output being 1821 tons in 1910. The principal domestic source of the ore is Colorado, with California producing about one-sixth of the total. The Colorado ores are the ones most used for reduction. They are controlled largely by two interests which produce either the alloy or the metal. The price of the domestic ore has advanced from $7 to approximately $10 per unit.

S. Fair & Son, Inc., Saginaw, Mich., have contracted with the Snyder Electric Furnace Company, Monadnock Building, Chicago, for the installation of a small electric furnace. This furnace, which will give a 24-hr. output of 8 tons of refined steel, will be used in the manufacture of high grade vanadium steel castings. It will run on cold melting.

A GAIN OF TEN FURNACES

Considerable Increase in Steel Works Iron

Daily Output and Capacity Active Approximately 3000 Tons More in May Than in the Month Previous

The rate of production of pig iron on June 1 was approximately 3000 tons a day more than on May 1. The output for last month was 2,263,470 tons, or 73,015 tons a day, against 2,116,494 tons in April, or 70,550 tons per day. There was a net gain of 10 furnaces in the month, from 195 to 205, and the gain since January 1 is 59. About two-thirds of the increase in the daily rate of production last month was made by the steel works furnaces, the total gain for the month being over 110,000 tons. The capacity active on June 1 was 74,343 tons a day, compared with 71,385 tons on May 1.

DAILY RATE OF PRODUCTION

The daily rate of production of coke and anthracite pig iron by months, from May, 1914, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons

	Steel works	Merchant	Total
May, 1914	47,028	20,478	67,506
June	44,321	19,595	63,916
July	45,027	18,123	63,150
August	46,937	17,426	64,363
September	46,344	16,409	62,753
October	41,026	16,335	57,361
November	35,305	15,306	50,611
December	33,381	15,515	48,896
January, 1915	35,998	15,661	51,659
February	44,192	15,621	59,813
March	50,036	16,539	66,575
April	52,804	17,746	70,550
May	54,655	18,360	73,015

OUTPUT BY DISTRICTS

The accompanying table gives the production of all coke and anthracite furnaces in May and the three months preceding:

Monthly Pig-Iron Production—Gross Tons

	Feb. (28 days)	Mar. (31 days)	Apr. (30 days)	May (31 days)
New York	113,509	138,539	156,449	176,423
New Jersey	6,096	6,738	6,592	6,600
Lehigh Valley	52,384	61,116	63,679	64,796
Schuylkill Valley	39,756	50,814	50,356	51,743
Lower Susquehanna and Lebanon Valley	31,901	34,267	32,581	28,061
Pittsburgh district	429,771	537,541	497,890	538,654
Shenango Valley	80,922	95,229	101,172	121,910
Western Pennsylvania	116,524	129,657	132,849	139,247
Maryland, Virginia and Kentucky	27,828	40,680	38,860	45,593
Wheeling district	60,692	82,249	84,700	83,400
Mahoning Valley	182,912	247,530	281,742	310,234
Central and Northern Ohio	134,640	159,566	162,448	165,882
Hocking Valley and Hanging Rock	25,822	27,511	19,985	15,149
Chicago district	174,346	236,274	269,259	292,891
Mich., Minn., Mo., Wis. and Col.	60,787	66,921	63,712	60,789
Alabama	126,289	136,820	139,457	146,502
Tennessee	10,592	12,382	14,763	15,656
Total	1,674,771	2,063,834	2,116,494	2,263,470

PRODUCTION OF STEEL COMPANIES

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in the figures below, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Pig, total production			Spiegeleisen and ferromanganese		
	1913	1914	1915	1913	1914	1915
Jan.	1,981,560	1,261,430	1,115,944	15,633	17,325	18,041
Feb.	1,792,154	1,329,414	1,237,380	20,131	10,524	13,319
Mar.	1,904,878	1,704,688	1,551,082	20,546	20,133	12,274
Apr.	1,939,751	1,635,226	1,584,111	23,108	18,676	12,337
May	1,991,192	1,457,847	1,694,290	19,042	21,504	13,440
June	1,860,070	1,329,623	.....	19,212	16,254	.....
July	1,840,216	1,395,851	.....	22,310	16,524	.....
Aug.	1,833,352	1,455,054	.....	20,680	11,577	.....
Sept.	1,828,232	1,390,322	.....	24,555	13,786	.....
Oct.	1,848,634	1,271,820	.....	19,499	17,435	.....
Nov.	1,573,007	1,059,159	.....	26,765	21,977	.....
Dec.	1,298,262	1,034,802	.....	14,095	20,733	.....

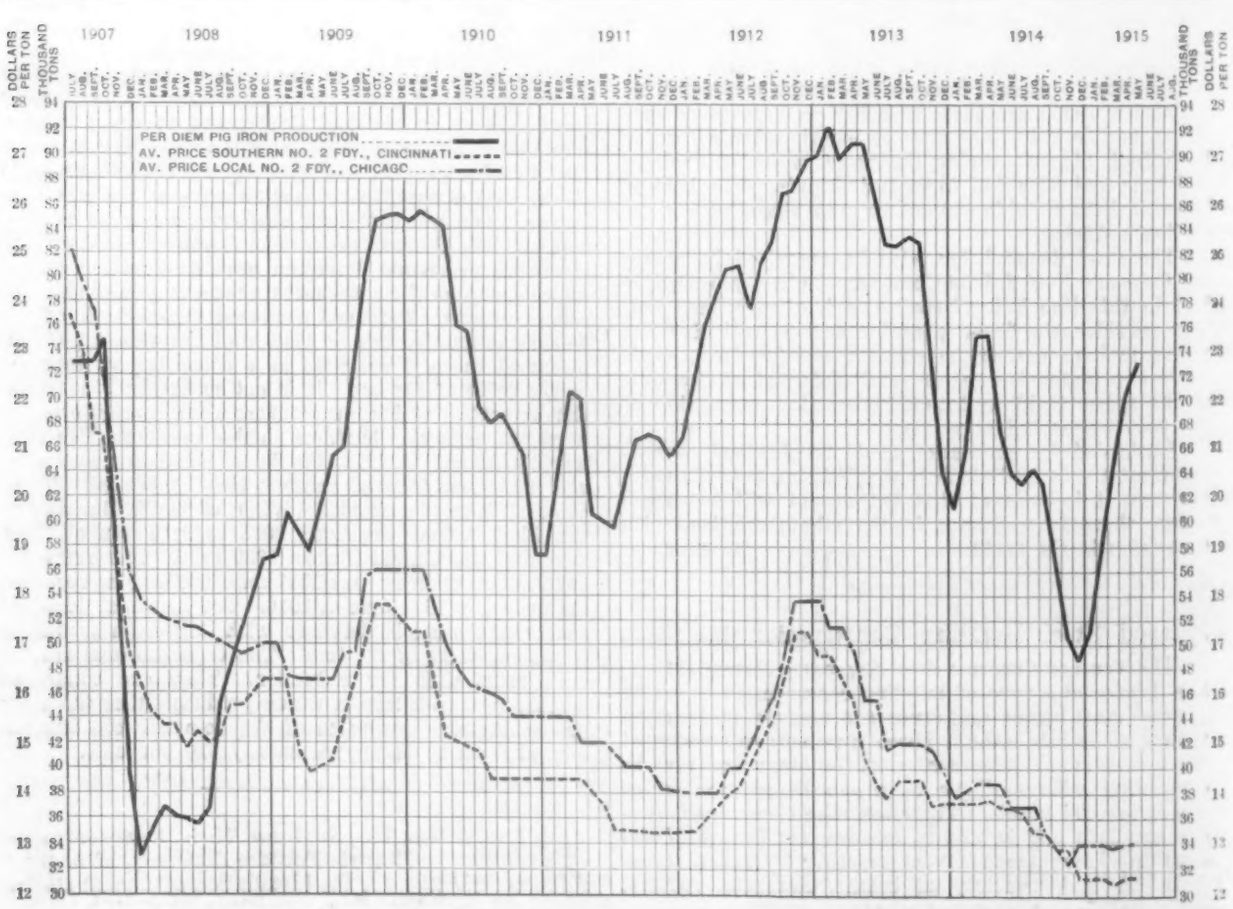

Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from July 1, 1907, to June 1, 1915; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron at Chicago District Furnace

CAPACITY IN BLAST JUNE 1 AND MAY 1

The following table shows the daily capacity in gross tons of furnaces in blast June 1 and May 1 by districts:

Coke and Anthracite Furnaces in Blast

Location of furnaces	Total number of stacks	June 1 Number in blast	June 1 Capacity per day	May 1 Number in blast	May 1 Capacity per day
New York:					
Buffalo	19	14	5,263	14	5,069
Other New York	7	2	429	2	429
New Jersey	7	1	213	1	219
Pennsylvania:					
Lehigh Valley	22	7	1,751	8	1,913
Spiegel	2	2	211	2	210
Schuylkill Val.	15	5	1,669	5	1,679
Lower Susquehanna	7	2	510	2	522
Lebanon Valley	10	2	390	2	419
Pittsburgh Dist.	52	38	18,003	36	16,984
Ferro	4	1	102	1	112
Shenango Val.	19	10	4,281	9	3,707
Western Pa.	27	16	4,792	15	4,428
Maryland	3	1	434	1	458
Ferro	1	1	87	1	89
Wheeling Dist.	11	7	2,731	7	2,823
Ohio:					
Mahoning Val.	25	22	10,112	21	9,391
Central and Northern	24	14	5,681	13	5,087
Hocking Val. & Hanging Rock	15	5	711	4	463
Ill. and Ind.	34	20	9,984	19	9,308
Ferro	2	1	32	0	0
Michigan, Wis. & Minn.	10	5	1,331	5	1,371
Colo. and Mo.	7	2	626	2	753
The South:					
Virginia	24	5	735	5	587
Kentucky	5	1	240	1	223
Alabama	46	17	3,520	15	4,649
Tennessee	20	4	505	4	492
Total	418	205	74,343	195	71,385

Among the furnaces blown in in May were one Carrie, one Isabella and Clinton in the Pittsburgh district, one Shenango in the Shenango Valley, one Cambria in western Pennsylvania, Buena Vista in Virginia, Mary in the Mahoning Valley, Marting in the Hanging Rock district, one Iroquois and Gary No. 5 in the Chicago district, and Philadelphia and No. 1 Ensley in Alabama.

The furnaces blown out last month were No. 1 Hokendauqua in the Lehigh Valley, which was banked, Alleghany in Virginia and Top Mill in the Wheeling district, which was banked for repairs.

DIAGRAM OF PIG-IRON PRODUCTION AND PRICES

The fluctuations in pig-iron production from July, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron at furnace at Chicago. They are based on the weekly market quotations of *The Iron Age*. The figures for daily average production, beginning January, 1908, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1908—Gross Tons

	1908	1909	1910	1911	1912	1913	1914	1915
Jan.	33,918	57,975	84,148	56,752	66,384	90,172	60,808	51,659
Feb.	37,163	60,976	85,616	64,090	72,442	92,369	67,453	59,813
Mar.	39,619	59,232	84,459	70,036	77,591	89,147	75,738	66,575
Apr.	38,289	57,962	82,792	68,836	79,181	91,759	75,665	70,550
May	37,603	60,753	77,102	61,079	81,051	91,039	67,506	73,015
June	36,444	64,656	75,516	59,585	81,358	87,619	63,916	.....
July	39,287	67,793	69,305	57,841	77,738	82,601	63,150	.....
Aug.	42,851	72,546	67,963	62,150	81,046	82,057	64,363	.....
Sept.	47,300	79,507	68,476	65,903	82,128	83,531	62,753	.....
Oct.	50,554	83,856	67,520	67,811	86,722	82,133	57,361	.....
Nov.	51,595	84,917	63,659	66,648	87,697	74,453	50,611	.....
Dec.	56,158	85,022	57,349	65,912	89,766	63,987	48,896	.....

THE RECORD OF PRODUCTION

Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1911—Gross Tons

	1911	1912	1913	1914	1915
Jan.	1,759,326	2,057,911	2,795,331	1,885,054	1,601,421
Feb.	1,794,509	2,100,815	2,586,337	1,888,670	1,674,771
Mar.	2,171,111	2,405,318	2,763,563	2,347,867	2,063,834
Apr.	2,064,086	2,375,436	2,752,761	2,269,955	2,116,494
May	1,893,456	2,512,582	2,822,217	2,092,686	2,263,470
June	1,787,566	2,440,745	2,628,565	1,917,783	.....
July	1,793,068	2,410,889	2,560,646	1,957,645	.....
Aug.	1,926,637	2,512,431	2,545,763	1,995,261	.....
Sept.	1,997,102	2,463,839	2,505,927	1,882,577	.....
Oct.	2,102,147	2,689,933	2,546,261	1,778,186	.....
Nov.	1,999,433	2,630,854	2,233,123	1,518,316	.....
Dec.	2,043,270	2,782,737	1,983,607	1,515,752	.....

The Worcester Wire Industry

The wire industry of Worcester, Mass., is operating at close to top speed. Orders are coming from a wide diversity of sources—the war influence being only one of the dominating factors. The spelter situation has had its effect, but the season for fencing has about reached its end.

The several Worcester works of the American Steel & Wire Company are exceedingly busy in practically all departments, and a large proportion of the plants are operating with night and day shifts. An appreciable improvement is reported for the last fortnight, with some almost record breaking days in the way of orders.

The Morgan Spring Company is operating to full capacity and so is the Spencer Wire Company, in its works at Worcester and Spencer, Mass. The Wright Wire Company is equally busy, except the seasonable correction as to the demand for fencing and similar products.

Some drawback is experienced in the scarcity of good men, particularly wire drawers.

An interesting incident is an inquiry for 500,000 miles of small wire rope of a special type from the British Government. The price of this material, as now quoted in England, is $15 a mile, and on that basis the total cost would be $7,500,000. No one in the New England territory can take the order, because of delivery specifications, combined with the absolute inability of the builders of this class of machinery to produce beyond the business already placed with them. The calculation has been made that a single rope machine would require 21 years to complete an order of this magnitude.

Atha Steel Plant Improvements

The Crucible Steel Company of America, Pittsburgh, is making large additions to its Atha works at Harrison, N. J. The program for these additions was made several years ago, but active work was not started until recently on account of the depression in the steel trade. The American Bridge Company was awarded a contract for 4000 tons of steel to be used in the erection of new buildings. A new 20-in. motor-driven cogging mill, to break down 4 x 4-in. billets, is being installed. A large addition to the power plant and two large extensions to the machine shop are being made. The increase in capacity thus secured will be largely devoted to the production of machined forgings. Last week the company placed an order for 15 electric traveling cranes, ranging in capacity from 5 to 50 tons, to be installed in the new buildings.

Blast Furnace Notes

One Marting furnace of the Marting Iron & Steel Company, Ironton, Ohio, which was blown out in April, was put in blast again May 27.

The Iroquois Iron Company, Chicago, blew in one of its furnaces on May 26.

Dover furnace of the Penn Iron & Coal Company, Canal Dover, Ohio, was blown in June 1.

The E. & G. Brooke Iron Company, Birdsboro, Pa., blew in one of its furnaces in the past week. Both stacks have been idle for more than a year. The furnace just blown in has been thoroughly overhauled and a number of improvements have been made.

The Timken Roller Bearing Company, Canton, Ohio, will shortly begin the erection of a cold drawing steel plant. The plans call for the erection of a building 100 x 300 ft. and it is expected that additional units will be erected later. Machinery and other equipment are now being purchased. This company has been quite a heavy consumer of cold drawn steel during the past few months.

The 800-ton hydraulic drawing press recently installed in the plant of the Prest-O-Lite Company was built by the Hydraulic Mfg. Company, Mt. Gilead, Ohio, and not the Hydraulic Pressed Steel Company, as stated in *The Iron Age* of June 3, on page 1229.

The Iron and Metal Markets

STEEL MILLS MORE ACTIVE

Pittsburgh Operations Are Conspicuous

Pig-Iron Output Increasing — Bar and Other Contracts for Third Quarter

To a greater extent than usual the Pittsburgh district is leading in the amount of new business in steel and in the degree of activity at works. The steel called for by car orders recently placed and those for Russia, which are practically closed, added to new war orders, have given added strength to the situation.

At the same time reports from the Chicago district reflect only a moderate operation and no change in the rate of current orders, which for some time has been spoken of conservatively. Eastern works also find few signs of a broadening market on strictly domestic account.

Pittsburgh mills have added to their shrapnel bar orders in the past fortnight. The amount is hard to arrive at, but more mills have been turned to bars since deliveries have fallen behind. The Carnegie Steel Company has on its books 100,000 steel wheels and 100,000 tons of axles. The 7000 cars for Russia will mean 85,000 tons of steel, and there are now inquiries for 3745 cars from France.

After the sensational exaggerations of war business, authentic statements of actual contracts seem tame; but the real measure of what the country is doing in this way can be taken from mill operations. Those in the Pittsburgh district are somewhat above 80 per cent., and in the aggregate new orders there have shown a rather steady increase for the past three weeks.

Increase in steel works output is again confirmed by the figures of pig-iron production, the blast furnaces of the steel companies making 110,000 tons more in May than in April. The total pig-iron output last month was 2,263,470 tons, or 73,015 tons a day, against 2,116,494 tons in April, or 70,550 tons a day. With 205 furnaces in blast June 1, or 10 more than on May 1, the active capacity was 74,343 tons against 71,385 tons one month previous. Pig-iron production is now at the rate of 27,400,000 tons a year. On April 1 it was at 26,000,000 tons and on January 1 at 18,000,000 tons a year.

The makers of all galvanized steel products are at sea over spelter, but are beyond capacity for surprise at any price. Galvanized sheets have gone to 4.75c. and 5c. for No. 28 and in many directions business has come to a halt. Many contracts are being filled at a loss. A vigorous campaign has been started by sheet producers to substitute painted black sheets for galvanized. In Great Britain the galvanized sheet trade is excited over the proposal to forbid the use of spelter in galvanizing, so as to conserve it for the brass trade.

Western agricultural works are close to the point of closing bar contracts, but there is still a deadlock over the rule the mills would lay down limiting these to 1915. The outlook for harvesting machinery is brighter than some recent reports would have it.

Third quarter buying in shapes and bars has begun, and the 1.25c. price on bars is more confidently predicted by the mills. There is less certainty about carrying it for plates and shapes. Eastern shipyards, with one exception, are crowded with new work. Three freight vessels have been placed in the past two weeks, and many negotiations are pending. An important Eastern shipyard project is likely to take shape soon, and a second new yard is a possibility.

Export inquiry for tin plates amounts to 250,000 to 300,000 boxes, Scotland asking for 50,000 boxes. Specifications from can makers are more active. The American Sheet & Tin Plate Company is now operating 95 per cent. of its hot mill capacity.

The buying of 30,000 to 40,000 tons of basic iron by an Eastern steel company stands out in a dull pig-iron market. Prices were from $13.50 to $13.75 delivered, an advance of 25 to 50 cents since the last round buying in eastern Pennsylvania two months ago.

In the foundry trade any increased melt of iron is at gray-iron shops and by machinery manufacturers rather than jobbing foundries. Speculative buyers of Southern iron have been sounding makers with a view to adding to their 100,000-ton stocks if concessions are made.

Coke output is increasing. The Frick Company put in 500 ovens in the past week and is planning to start 500 more. A shortage of labor is already reported in the coke regions, due to the exodus of many men to Italy and to Canada. New England shops are feeling the Canadian demand for skilled mechanics for war work.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month and one year previous

	June 9, 1915.	June 2, 1915.	May 12, 1915.	June 10, 1914.
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia....	$14.25	$14.25	$14.25	$14.75
No. 2, Valley furnace...	12.75	12.75	12.75	13.00
No. 2 Southern, Cin'ti....	12.40	12.40	12.40	13.75
No. 2, Birmingham, Ala..	9.50	9.50	9.50	10.50
No. 2, furnace, Chicago*.	13.00	13.00	13.00	13.50
Basic, del'd, eastern Pa..	**13.50**	13.25	13.25	14.00
Basic, Valley furnace....	12.50	12.50	12.50	13.00
Bessemer, Pittsburgh....	14.70	14.70	14.55	14.90
Malleable Bess., Ch'go*..	13.00	13.00	13.00	13.75
Gray forge, Pittsburgh...	13.45	13.45	13.45	13.65
L. S. charcoal, Chicago..	15.75	15.75	15.75	15.75
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh.	20.00	20.00	20.00	19.50
O.-h. billets, Pittsburgh..	20.00	20.00	20.00	19.50
O.-h. sheet bars, P'gh...	21.00	21.00	21.00	20.50
Forging billets, P'gh....	26.00	26.00	26.00	25.00
O.-h. billets, Phila.....	22.02	22.02	22.02	22.40
Wire rods, Pittsburgh...	25.00	25.00	25.00	24.50
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia..	1.17½	1.17½	1.17½	1.17
Iron bars, Pittsburgh....	1.25	1.25	1.20	1.25
Iron bars, Chicago.....	1.20	1.20	1.15	1.10
Steel bars, Pittsburgh...	1.20	1.20	1.20	1.12½
Steel bars, New York....	1.369	1.369	1.369	1.28½
Tank plates, Pittsburgh..	1.15	1.15	1.15	1.10
Tank plates, New York..	1.319	1.319	1.319	1.26
Beams, etc., Pittsburgh..	1.20	1.20	1.20	1.12½
Beams, etc., New York..	1.369	1.369	1.369	1.28½
Skelp, grooved steel, P'gh	1.15	1.15	1.12½	1.15
Skelp, sheared steel, P'gh	1.20	1.20	1.17½	1.20
Steel hoops, Pittsburgh.	**1.30**	1.25	1.25	1.25

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	June 9, 1915. Cents.	June 2, 1915. Cents.	May 12, 1915. Cents.	June 10, 1914. Cents.
Sheets, black, No. 28, P'gh.	1.75	1.75	1.80	1.80
Galv. sheets, No. 28, P'gh.	4.50	4.25	3.40	2.75
Wire nails, Pittsburgh	1.55	1.55	1.55	1.50
Cut nails, Pittsburgh	1.55	1.55	1.55	1.55
Fence wire, base, P'gh	1.35	1.35	1.35	1.30
Barb wire, galv., P'gh	2.40	2.20	2.10	1.90
Metals, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	22.50	21.00	21.00	14.12½
Electrolytic copper, N. Y.	19.62½	18.75	18.75	13.87½
Spelter, St. Louis	26.00	22.00	14.00	4.95
Spelter, New York	26.50	22.50	14.25	5.10
Lead, St. Louis	5.87½	4.82½	4.10	3.80
Lead, New York	6.00	4.90	4.20	3.90
Tin, New York	40.00	37.75	40.00	30.65
Antimony, Hallett's, N. Y.	none	none	40.00	6.87½
Tin plate, 100-lb. box, P'gh	$3.10	$3.15	$3.15	$3.30
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$1.50	$1.50	$1.50	$1.75
Furnace coke, future	1.65	1.65	1.65	1.85
Foundry coke, prompt	2.00	2.00	2.00	2.30
Foundry coke, future	2.25	2.15	2.15	2.50
Old Material, Per Gross Ton:				
Iron rails, Chicago	12.25	12.25	11.75	12.75
Iron rails, Philadelphia	15.00	15.00	15.00	15.00
Carwheels, Chicago	10.00	10.00	9.75	11.50
Carwheels, Philadelphia	11.50	11.50	11.50	11.25
Heavy steel scrap, P'gh	11.75	11.75	11.75	11.50
Heavy steel scrap, Phila.	11.00	11.00	11.50	10.50
Heavy steel scrap, Ch'go	9.50	9.50	9.25	9.75
No. 1 cast, Pittsburgh	12.00	12.00	12.00	11.50
No. 1 cast, Philadelphia	12.25	12.25	12.25	12.00
No. 1 cast, Ch'go (net ton)	9.00	9.00	9.00	9.75

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16.9c.; Philadelphia, 15.9c.; Boston, 18.9c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 32.9c.; Denver, 68.6c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal has no stability, being dependent on vessel charges.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c. base net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gauges under ¼ in. to and including 3-16 in.	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including straight taper plates), 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths under 3 ft. to 2 ft., inclusive.	.25
Cutting to lengths under 2 ft. to 1 ft., inclusive.	.50
Cutting to lengths under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Wire Products.—Prices to jobbers. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots, annealed, $1.35; galvanized, $2.15. Galvanized barb wire and staples, $2.40; painted, $1.60. Wire nails, $1.55. Galvanized nails, 1 in. and longer, $1.50 advance over base price; shorter than 1 in., $2 or more advance over base price. Woven wire fencing, 69 per cent. off list for carloads; 68 off for 1000-rod lots; 67 off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	2.30	2.35	2.40	2.45	2.55	2.65	2.95	3.05

Wire Rods.—Bessemer, open-hearth and chain rods, $25.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.20c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in., on one or both legs	.10
Angles, 3 in. on one or both legs less than ¼ in. thick, as per steel bar card, Sept. 1, 1909	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Handrail tees	.75
Cutting to lengths under 3 ft. to 2 ft. inclusive	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting to lengths 3 ft. and over.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card in effect from June 1, 1915, all full weight:

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛, ¼ and ⅜	72	46½	⅛ and ¼	64	37
½	76	59½	⅜	64	37
¾ to 3	79	63½	½	68	47
			¾ to 2½	71	52

Lap Weld

2	76	60½	1¼	55	36
2½ to 6	78	62½	1½	66	47
7 to 12	76	60½	2	67	49
13 and 14	62½	60½	2½ to 4	69	52
15	60	60½	4½ to 6	69	52
			7 to 12	67	52

Reamed and Drifted

1 to 3, butt	77	61½	1 to 1½, butt	69	50
2, lap	74	58½	2, butt	69	50
2½ to 6, lap	76	60½	1¼, lap	53	34
			1½, lap	64	45
			2, lap	65	47
			2½ to 4, lap	67	50

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	67	49½	⅜	61	43
½	72	58½	½	66	51
¾ to 1½	76	62½	¾ to 1½	70	53
2 to 3	77	63½	2 and 2½	71	54

Lap Weld, extra strong, plain ends

2	73	57½	1½	65	48
2½ to 4	75	59½	2	67	49
4½ to 6	74	58½	2½ to 4	69	52
7 to 8	68	52½	4½ to 6	68	51
9 to 12	63	47½	7 to 8	61	46
			9 to 12	56	41

Butt Weld, double extra strong, plain ends

½	62	48½	½	56	40
¾ to 1½	65	51½	¾ to 1½	59	43
2 to 2½	67	53½	2 and 2½	61	45

Lap Weld, double extra strong, plain ends

2	63	49½	2	57	40
2½ to 4	65	51½	2½ to 4	59	45
4½ to 6	64	50½	4½ to 6	58	44
7 to 8	58	42½	7 to 8	51	35

To the large jobbing trade an additional 5 per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts on less than carloads, f.o.b. Pittsburgh, freight to destination added, in effect from May 1, 1915, are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.	65	1¾ and 2 in.	52
2¼ in.	62	2¼ in.	49
2½ and 2¾ in.	68	2½ and 2¾ in.	56
3 and 3¼ in.	73	3 and 3¼ in.	60
3½ and 4½ in.	74	3½ and 4½ in.	62
5 and 6 in.	67	5 and 6 in.	56
7 to 13 in.	64		

Locomotive and steamship special charcoal grades bring higher prices.

1¾ in., over 18 ft., 10 per cent. net extra.

2 in. and larger, over 22 ft., 10 per cent. net extra.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots

from store, are as follows, f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.25 to 1.30
Nos. 9 to 10	1.30 to 1.35
Nos. 11 and 12	1.35 to 1.40
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.55 to 1.60

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.40 to 1.45
No. 12	1.40 to 1.45
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.50 to 1.55
Nos. 17 to 21	1.55 to 1.60
Nos. 22 and 24	1.60 to 1.65
Nos. 25 and 26	1.65 to 1.70
No. 27	1.70 to 1.75
No. 28	1.75 to 1.80
No. 29	1.80 to 1.85
No. 30	1.90 to 1.95

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	3.25
No. 12	3.35
Nos. 13 and 14	3.35
Nos. 15 and 16	3.45
Nos. 17 to 21	3.60
Nos. 22 and 24	3.80
Nos. 25 and 26	3.95
No. 27	4.10
No. 28	4.25
No. 29	4.35
No. 30	4.50

These prices for galvanized are wholly nominal.

Pittsburgh

PITTSBURGH, PA., June 8, 1915.

The court decision in favor of the United States Steel Corporation, the large amount of current business in iron and steel products that is being booked and the heavy new inquiry for nearly all kinds of material combine to place the situation in the steel business on a better and firmer basis than it has been for months. Orders on the books of the leading steel companies for delivery over the next three or four months are the largest in any period in nearly two years. Shipments have been very heavy in the past three or four weeks, yet orders have been still heavier, having shown a decided gain over shipments. The Carnegie Steel Company is operating this week to about 85 per cent. of ingot capacity, and when it starts to roll some of the orders now on its books, but which are not for delivery before July and August, this rate will be increased. The company has booked heavy orders for plates, shapes, steel wheels and axles for the Pennsylvania car order. It now has orders on its books for about 100,000 carwheels and nearly 100,000 tons of steel axles. Prices on nearly all lines of products are strong, and makers believe they will be able to obtain the 1.25c. price on plates, shapes and bars which goes into effect July 1. Plates may sell under 1.25c. for the third quarter, but the heavy orders for car plates have undoubtedly strengthened the market to some extent. Pig iron is only fairly active but prices are firm. The steel situation is tightening up and prices in the Youngstown district this week are slightly higher. The spelter situation has disarranged the business of those making galvanized products, and some of them are turning out this material at a loss. Coke is quiet but firm and this is true also of scrap. The situation for the remainder of this year looks good from every standpoint.

Pig Iron.—The Westinghouse Electric & Mfg. Company is in the market for a large lot of foundry pig iron for delivery over the second half of this year. There is not much new inquiry for basic or Bessemer iron, but prices are firm. A sale is reported of 300 tons of Bessemer for prompt shipment at $13.75, Valley furnace, and one of 2000 to 2500 tons of gray forge at $12.50, Valley furnace. Small sales of high-grade foundry iron for June and July delivery are being made at about $12.75, Valley furnace, or slightly under. We quote: Bessemer iron, $13.75; malleable Bessemer, $12.75; No. 2 foundry, $12.75 to $13; basic, $12.65, and gray forge, $12.50, all at Valley furnace, with a freight rate of 95c. a ton for delivery in the Cleveland and Pittsburgh districts.

Billets and Sheet Bars.—The steel situation is tightening up, and if the finishing mills continue to increase their rate of operations it is predicted there will be a shortage in the supply of open-hearth steel. The Carnegie Steel Company has notified the United States Steel Products Company not to sell any billets or sheet bars for its account for foreign delivery, and has also advised its customers that it cannot increase the tonnage called for in present contracts, as its supply of steel is getting short. Most steel mills in the Youngstown district are running this week at close to 100 per cent. One leading steel company there is shipping open-hearth billets abroad in large quantities. We quote Bessemer and open-hearth billets at $19 to $19.50, and Bessemer and open-hearth sheet bars, $19.50 to $20, f.o.b. makers' mills, Youngstown; Bessemer and open-hearth billets, $20 to $21, and Bessemer and open-hearth sheet bars, $21 to $22, f.o.b. Pittsburgh. Forging billets are quoted at $26 for sizes up to but not including 10 x 10 in., and for carbons up to 0.25, the regular extras being charged for larger sizes and lighter carbons. Forging billets running above 0.25 to 0.60 carbon take $1 per ton extra. Axle billets are held at $21 to $22.

Ferroalloys.—There is not much inquiry for ferromanganese, as consumers are getting good deliveries on their contracts. Dealers are offering 80 per cent. English ferromanganese for prompt delivery at $90 to $95 per ton, f.o.b. Pittsburgh, and recently a number of carload lots have been sold at close to $85. The foreign price is supposed to be $100, seaboard, but no contracts would be made by consumers at this price. We quote 50 per cent. ferrosilicon in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; and over 600 tons, $71, delivered in the Pittsburgh district. We quote 10 per cent. ferrosilicon at $17; 11 per cent., $18; 12 per cent., $19, all f.o.b. cars at furnace, Ashland, Ky., Jackson or New Straitsville, Ohio, each of these points having a rate to Pittsburgh of $2 per gross ton. We quote 20 per cent. spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads, 10c. in 2000-lb. lots and over, and 12½c. in smaller lots.

Structural Material.—New inquiry in the past week was better. The McClintic-Marshall Company has taken 2000 tons for an extension to the plant of the John A. Roebling's Sons Company, Roebling, N. J., and 400 tons for a forge shop for the Timken-Detroit Company, Detroit, Mich. The Pittsburgh Bridge & Iron Company has taken 200 tons for new steel buildings for the Erie Stove Company, Erie, Pa., and the Pittsburgh-Des Moines Bridge Company 400 tons for steel buildings for the Reznor Stove Company, Mercer, Pa. The Penn Bridge Company, Beaver Falls, has taken a 400-ton highway bridge at Youngstown and the American Bridge Company has secured a building for the People's Outfitting Company, Detroit, Mich., requiring 1000 tons. Prices are reported to be slightly firmer. It is expected that next week the Carnegie Steel Company will notify its sales managers not to accept any more business in structural shapes, plates or steel bars at less than 1.25c., Pittsburgh. We quote beams and channels up to 15 in. for June delivery at 1.20c., and for third quarter delivery 1.25c., f.o.b. Pittsburgh.

Plates.—Reliable reports are that the long-deferred order from Russia for 7000 steel cars has been placed with the Pressed Steel Car Company. It is understood this concern has covered with the Carnegie Steel Company for the plates, shapes and bars for these cars—about 85,000 tons—each car requiring about 12 tons. The contemplated order of the Rock Island for 5000 cars is still held up in the courts. The Standard Steel Car Company has taken 1000 tank cars for the Union Tank Line, options on which it gave in December last. The Pressed Steel Car Company has taken 40 ore cars for the Chile Exploration Company, and the Havana Central Railroad is asking prices on 600 flat and box cars. The steel car companies have not yet started to build the cars for the Pennsylvania Railroad, but will probably do so early in July. The current demand for plates is heavy. The Carnegie Company is running its plate mills to 100 per cent. of capacity. We quote ¼-in. and heavier plates for June shipment at 1.15c. to 1.20c., f.o.b. Pittsburgh, and note that the market is firmer.

Steel Rails.—The 5100 tons of standard sections for the Norfolk & Western taken by the Carnegie Steel Company will be rolled at its Edgar Thomson mills. The opening up of Lake navigation and the activity in the coal trade have caused a good demand for light

rails, the Carnegie Company having taken about 4000 tons in the past week. We quote standard section rails of Bessemer stock at 1.25c., and of open-hearth, 1.34c., f.o.b. Pittsburgh. We quote light rails as follows, in carload lots: 8 and 10 lb. section, 1.275c.; 12 and 14 lb., 1.225c.; 16 and 20 lb., 1.175c.; 25, 30, 35, 40 and 45 lb. sections, 1.125c. The prices of light rails are materially shaded on large lots.

Sheets.—The situation in galvanized sheets is more complicated. The American Sheet & Tin Plate Company is still quoting 4.25c. on No. 28 gauge, but only for spot shipment and in limited quantities to regular customers. A number of sheet mills are refusing to quote on galvanized sheets and are bending their entire energies to getting orders for black, with the result that prices on Bessemer black sheets are slightly lower. Spelter was quoted on Monday at 26c. to 26½c. for forward delivery, and hard to get. This condition in the spelter market is seriously interfering with earnings of nearly all the sheet steel companies. The new demand for blue annealed and black sheets is fairly active, and shipments by the mills are quite heavy. We quote No. 28 Bessemer black sheets at 1.75c. to 1.80c.; No. 28 galvanized, 4.25c.; Nos. 9 and 10 blue annealed sheets, 1.30c. to 1.35c.; No. 30 black plate, tin-mill sizes, H. R. & A., 1.95c.; No. 28, 1.90c.; Nos. 27, 26 and 25, 1.85c.; Nos. 22 to 24, 1.80c.; Nos. 17 to 21, 1.75c.; Nos. 15 and 16, 1.70c. The above prices are for carload lots, f.o.b. at maker's mill, jobbers charging the usual advances for small lots from store.

Tin Plate.—A feature of the market is the heavy export inquiry for tin plate, aggregating 250,000 to 300,000 boxes. One inquiry is for 50,000 boxes for Scotland, and an order for a larger amount for export will be closed this week. The American Sheet & Tin Plate Company is running to 95 per cent. of hot tin mill capacity. Specifications from the can makers are more active, nearly all the mills having orders ahead for four to six weeks. The general demand is fairly large. On new orders we quote 14 x 20 coke plates at $3.10 to $3.25 per base box, the price depending on the order and shipments wanted.

Wire Rods.—The foreign inquiry for wire rods continues heavy. A local concern has refused in the past week to quote on fully 8000 to 10,000 tons for export, being filled up on rods for practically the remainder of this year. It is stated that an order for 4000 tons for France was placed last week. The domestic demand is also active, and consumers are specifying heavily against contracts. It is stated that all the rod mills are now running to 100 per cent. of capacity and are back in orders. We quote Bessemer, open-hearth and chain rods at $25 to $26, f.o.b. Pittsburgh, for domestic business.

Carwheels.—Through the steel car companies the orders for the 112,344 carwheels for the Pennsylvania Railroad cars have been placed with the Carnegie Steel Company, Forged Steel Wheel Company, Midvale Steel Company and Standard Steel Works Company. Steel wheels are to be used entirely on these cars. We quote standard 33-in. freight carwheels 6¼ in. rough bore at $16, and standard 36-in. passenger, the same bore, at $22.50 per wheel, f.o.b. Pittsburgh.

Shafting.—For the first time in some months makers of shafting are now running to about 100 per cent. of capacity and new orders are heavy. The screw stock machine trade is buying very largely and specifications from the automobile builders are heavy. Prices on shafting are firm, 68 per cent. off in carloads and larger lots is generally quoted for forward delivery, but on a desirable order for prompt shipment 69 to 70 per cent. off would be named. On small lots, the discount is 63 per cent. off, all f.o.b. Pittsburgh.

Railroad Spikes.—The Norfolk & Western has placed 2000 kegs with the Jones & Laughlin Steel Company and 2000 kegs with Dilworth, Porter & Co., Ltd. The Pennsylvania Lines West order for 10,000 kegs, which has been in the market for some time, will be closed this week, and will go to local makers. Prices on spikes are firmer. We quote standard railroad spikes at $1.35 to $1.40, the lower price being made on very desirable orders, and small railroad and bolt spikes from $1.50 to $1.55 in carload and larger lots per 100 lb., f.o.b. Pittsburgh.

Hoops and Bands.—The new demand is heavier and prices are firmer. One leading maker is holding hoops at 1.35c and will not shade this price Specifications against contracts are coming in actively, and the mills are filled for some time ahead. We quote steel bands at 1.20c. for June and 1.25c. for third quarter, with extras as per the steel bar card, and steel hoops at 1.30c. to 1.35c., f.o.b. Pittsburgh. The lower price is being named by only one or two makers and on very desirable specifications for prompt shipment.

Skelp.—The new demand is more active and the mills have more orders on hand than for some months. Prices are firmer and likely to be higher in the near future. We quote grooved steel skelp, 1.15c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.50c. to 1.55c.; sheared iron skelp, 1.60c. to 1.65c., delivered to consumers' mills in the Pittsburgh district.

Wire Products.—The foreign demand for both barb and plain wire is enormously heavy. One local concern states that in the past week or so it has declined to quote on fully 50,000 tons of barb wire for export, being back in orders now from four to six weeks. The spelter situation is very grave, and the full differential of 80c. is now being charged for all galvanized products. The domestic demand for wire nails is fair, and the mills still have a good many contracts on their books against which specifications are quite active. To jobbers on new orders mills quote: Wire nails, $1.55; galvanized nails, 1 in. and longer taking an advance over this price of $1.50, and shorter than 1-in., $2 or more. Plain annealed wire is $1.35 to $1.40; galvanized barb wire and fence staples, $2.40; painted barb wire, $1.60, all f.o.b. Pittsburgh, with freight added to point of delivery, terms 30 days net, less 2 per cent. off for cash in 10 days. Prices on woven wire fencing are higher, and it is now quoted at 69 per cent. off in carload lots, 68 per cent. on 1000-rod lots, and 67 per cent. on small lots, f.o.b. Pittsburgh.

Iron and Steel Bars.—The foreign demand for rounds for shrapnel purpose is crowding the mills to their utmost capacity. A leading company has taken over 100,000 tons of rounds for shrapnel in the past two or three weeks. Last week the Carnegie Steel Company started to turn out rounds at its Edgar Thomson rail mills at Bessemer, and this week will start to make rounds at its Ohio works at Youngstown. The steel-bar mills are well filled for the next four or five weeks, and several of the larger makers that cannot take any more orders for this month's delivery are now quoting steel bars at 1.25c., minimum, for third quarter. The implement makers realize the situation in steel bars, and now seem more anxious to close their contracts for last half of this year and first half of next. The mills are holding firmly for 1.20c. on this business and will not change it. The new demand for steel bars for reinforcing purposes is heavy, but prices are ruling low. Common iron bars are in heavier demand, and the mills are better fixed with orders than for some time. We quote steel bars at 1.20c. for June and 1.25c. for third quarter. We quote common iron bars at 1.25c. to 1.30c., and test iron bars at 1.35c., f.o.b. Pittsburgh.

Cold-Rolled Strip Steel.—It is stated that two foreign inquiries amounting to 4000 to 5000 tons are in the market and makers report the demand heavier than in a year or more. The mills are running close to 100 per cent. of capacity and prices are very firm. We quote hard-rolled steel, 1½ in. and wider, under 0.20 carbon, sheared or natural mill edge, per 100 lb., $2.75, delivered. Extras, which are standard among all the mills, are as follows:

Thickness, in.	Extras for thickness	Extras for soft or intermediate tempers	Extras for straightening and cutting to lengths not less than 24 in.
0.100 and heavier	Base	$0.25	$0.10
0.099 to 0.050	$0.05	0.25	0.15
0.049 to 0.035	0.20	0.25	0.15
0.034 to 0.031	0.35	0.40	0.25
0.030 to 0.025	0.45	0.40	0.40
0.024 to 0.020	0.55	0.40	0.50
0.019 to 0.017	0.85	0.50	1.10
0.016 to 0.015	1.25	0.50	1.10
0.014 to 0.013	1.95	0.50	1.25
0.012	2.30	0.50	coils only
0.011	2.65	0.50	coils only
0.010	3.00	0.50	coils only

Merchant Steel.—The market is more active and prices are higher. One leading mill is reported to have advanced its price the past week close to $2 per ton. Prices to the small trade are now as follows: Iron finished tire, ½ x 1½ in. and larger, 1.40c.; base; under ½ x 1½ in., 1.55c.; planished tire, 1.60c.; channel tire, ¾ to ⅞ and 1 in., 1.90c. to 2c.; 1⅛ in. and larger, 2c.; toe calk, 2c. to 2.10c., base; flat sleigh shoe, 1.75c.; concave and convex, 1.80c.; cutter shoe tapered or bent, 2.30c. to 2.40c.; spring steel, 2c. to 2.10c.; machinery steel, smooth finish, 1.80c.

Rivets.—The demand for rivets is better. Makers report they are receiving more orders than for some time. Prices are also firmer and we now quote structural rivets at $1.50 and conehead boiler rivets at $1.60 per 100 lb. in carload lots f.o.b. Pittsburgh, an advance of 5c. to 10c. being charged for smaller lots.

Nuts and Bolts.—Prices on nuts have not advanced but are very firm and are expected to be higher in a short time. Bolts are slightly higher and the demand is heavier. Discounts on nuts on large lots are as follows:

U. S. S. Cold Punched Blank and Tapped, Chamfered, Trimmed and Reamed

½ in. and smaller, hex.....8.1c. per lb. off
⅝ in. and larger, hex.....7.3c. per lb. off
Square, all sizes .....5.8c. per lb. off

Semi-Finished Tapped

½ in. and smaller hex.....85-10-10-10 off
⅝ in. and larger hex.....85-10-10 off

Black Bulk Rivets

7/16 x 6½, smaller and shorter.....80-10-5 off

Package Rivets 1000 Pcs.

Black, metallic tinned and tin plated....75-10-10 off

Discounts on bolts as recently adopted are as follows:

Common carriage bolts, ⅜ x 6, S & S rolled, 80-5; cut, 80; larger or longer, 75-5. Machine bolts, h. p. nuts, ⅜ x 4, S & S rolled, 80-5; cut, 80; larger or longer, 75-2/10. Machine bolts with C. P. & C & T nuts, ⅜ x 4, S & S, 75-2/10; larger or longer, 75. Bolts without nuts, 6 in. and shorter, extra 10%; longer lengths, extra 5%. G. P. coach screws, 75-2/10-5. Nuts, blank or tapped, h. p. square, 6.20; hexagon, 7.10. C. P. C & T square, 5.80; hex. ⅝ in. and up, 7.30; smaller, 8.1. C. P. plain, square, 5.30; hexagon, 5.70. C. P., semi-fin. hex., ⅝ and up, 85-3/10; smaller, 85-2/10.

Wrought Pipe.—Mills report the demand for tubular goods so far in June fully as heavy as in the same period in May, which was a very good month. A large gas line for the West, involving about 2500 to 3000 tons of pipe, is about ready to be placed and will likely be given out this week. Discounts on iron and steel pipe, printed on a previous page, are being firmly held.

Boiler Tubes.—The new demand for locomotive merchant tubes is better, the mills entering more orders at present than for some time. Discounts continue to be shaded, depending on the order.

Coke.—The Frick Coke Company has blown in over 500 ovens in the past few days, and expects to start at least 500 more within a week. The Carnegie Steel Company is making heavy demands on the Frick Company for coke. A shortage of labor is developing in the coke regions. Hundreds of Italians have left for Italy or have gone to Canada. The Pittsburgh Steel Company is figuring on blowing in its second Monessen blast furnace, which has long been idle, and is inquiring for about 16,000 tons of coke per month. A Sharpsville furnace interest is inquiring for about 15,000 tons per month. The Toledo Furnace Company expects to blow in its furnace and is asking for about 12,000 tons per month and there is another inquiry for the same amount. The furnace-coke inquiries now in the market total over 50,000 tons per month. The Connellsville Courier gives the output of coke in the upper and lower Connellsville regions for the week ended May 29 as 316,890 net tons, an increase over the previous week of over 10,000 tons, and the heaviest output in any one week for nearly two years. We quote best grades of furnace coke for delivery over the remainder of the year at $1.65 to $1.75, and for spot shipment $1.50 per net ton at oven. We quote standard makes of 72-hr. foundry coke for prompt shipment at $2 to $2.25, and on contracts for remainder of the year, from $2.25 to $2.50 per net ton at oven.

Old Material.—The Pennsylvania Railroad scrap list closed last week, and it is stated that the heavy steel melting scrap, nearly 5000 tons, was taken by dealers and also by several consumers at $12.15 to $12.25 per gross ton, Pittsburgh. The price paid was higher than is ruling today, but shipping directions for this scrap do not have to be furnished for 60 days, so that any dealers who bought this scrap at close to $12.25 are taking a chance on the market being higher when they have to furnish shipping directions for it. The local scrap market is quiet, and prices do not show much indication of being higher. At the same time the visible supply of scrap is light, and dealers are afraid to sell short for fear they may not be able to cover. There is some movement in low phosphorus melting stock, and we note sales of 750 to 1000 tons at $15.25 or higher; also a sale of 500 tons of turnings at considerably over $8, delivered. For delivery in Pittsburgh and nearby districts that take Pittsburgh freights, dealers quote about as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery		$11.75
Compressed side and end sheet scrap.	$10.25 to	10.50
No. 1 foundry cast	12.00 to	12.25
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	9.25 to	9.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	11.75 to	12.00
No. 1 railroad malleable stock	10.50 to	10.75
Railroad grate bars	8.50 to	8.75
Low phosphorus melting stock	15.25 to	15.50
Iron car axles	18.75 to	19.25
Steel car axles	13.25 to	13.75
Locomotive axles, steel	19.75 to	20.25
No. 1 busheling scrap	10.25 to	10.50
No. 2 busheling scrap	7.25 to	7.50
Machine shop turnings	8.00 to	8.25
Old carwheels	11.75 to	12.00
Cast-iron borings	8.50 to	8.75
*Sheet bar crop ends	12.00 to	12.25
Old iron rails	12.75 to	13.00
No. 1 railroad wrought scrap	10.75 to	11.00
Heavy steel axle turnings	8.50 to	8.75
Heavy breakable cast scrap	10.75 to	11.00

*Shipping point.

Chicago

CHICAGO, ILL., June 9, 1915.—(*By Wire.*)

Participation in the growing volume of business is limited in such a way that mere citation of orders placed with the mills is inadequate as an accurate index of the situation. The influence of war-inspired requirements is being felt increasingly, although in this territory indirectly and to a less extent than where export shipments can be made through more nearly normal channels. The failure of strictly domestic demand to respond to what seem to be altogether favorable underlying conditions scarcely calls for emphasis of what must be acknowledged. The agricultural implement interests are on the eve of disclosing what their expectations of business are for the coming year through the making of contracts for steel, and the belief is growing that their outlook is brighter than pessimistic reports thus far would suggest. Even in this connection, however, wherein lies the only conspicuous promise of domestic business of any magnitude, something like a deadlock prevails. The effort to restrict contract protection within the present year is being supported by the mills with much more firmness than ever before, but the implement buyers are still far from conceding the issue. The negotiations of the current week promise to have an important bearing, with the possibility of a number of contracts being closed. Western bar-iron and plate mills were idle a large portion of the week. Sheet-mill operations are quite out of joint, the mills endeavoring vigorously to substitute painted black sheets for the prohibitive galvanized product. Mill prices for the latter are now above the 5c., Pittsburgh basis, and no protection is offered with quotations not immediately accepted. The improved status of the general market is almost entirely attributable to the taking of shapes and bars, together with some railroad tonnage of rails and track fastenings. The Mt. Vernon Car Company is buying steel for 1000 cars, the order for which it took last week; the Monroe street bridge contract, calling for over 2000 tons, has been placed; the Burlington is taking figures on a 6000-ton bridge; orders are noted for 2000 tons of sheet bars for Great Britain

and a like quantity of plates for Canada; approximately 6000 tons of new orders for tie plates is reported and rail specifications last week aggregated nearly 15,000 tons. Favorable sentiment in the market continues to be enhanced by the prospect of the rail and car orders expected from the Pennsylvania Railroad. Transactions in pig iron are scattered and the tonnage involved is hardly sufficient to be designated as a buying movement even on a small scale. The strength of the market arises from the better tonnage now on furnace books.

Pig Iron.—Such strength as can be claimed of the pig-iron market is due to the business already on the books of the furnaces, their current obligations being the heaviest for many months. Foundries also are accepting deliveries in a more satisfactory manner. Evidence of the higher level of operations may be had in the recent blowing in of two additional furnaces. The buying movement to which the improvement is attributed has now spent itself, and current transactions can be traced to the few stragglers and to others who have taken additional work not covered by previous purchases. Judged both by contract deliveries and the activity in coke contracting, the foundry melt apparently is increasing, although heavier operations appear to be limited to the gray-iron field and to manufacturing rather than jobbing foundries. The price of local iron holds steady and in the South the leading producers are adhering to $9.75 and $10 for No. 2 soft at Birmingham, but there is evidence that some Southern iron can be had on the basis of $9.50. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace, and do not include a switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 2 to 5	$15.75
Lake Superior charcoal, No. 1	16.25
Lake Superior charcoal, No. 6 and Scotch	16.75
Northern coke foundry, No. 1	$13.50 to 13.75
Northern coke foundry, No. 2	13.00 to 13.50
Northern coke foundry, No. 3	12.50 to 13.00
Southern coke, No. 1 f'dry and 1 soft	14.00 to 14.25
Southern coke, No. 2 f'dry and 2 soft	13.50 to 14.00
Malleable Bessemer	13.00 to 13.25
Standard Bessemer	16.50
Basic	12.50 to 13.00
Low phosphorus	20.00 to 20.50
Jackson Co. and Ky. silvery, 8 per cent.	16.50 to 17.00
Jackson Co. and Ky. silv'y, 10 per cent.	17.50 to 18.00

(*By Mail*)

Rails and Track Supplies.—Steel specifications last week included nearly 15,000 tons of rails but no new contracts are reported. The Pennsylvania Lines West, whose tie plate requirements were estimated to run over 5000 tons, has placed this order, and has indicated the approximate quantity of rails and angle bars which will be placed here. Previous estimates have placed this rail allotment at 30,000 tons and the angle bars about 3000 tons. We quote standard railroad spikes at 1.45c. to 1.50c., base; track bolts with square nuts, 1.90c., base, all in carload lots, Chicago; tie plates, $23.25 to $24.25, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.07c.; 16 to 20 lb., 1.12c.; 12 lb., 1.17c.; 8 lb., 1.22c.; angle bars, 1.50c., Chicago.

Structural Material.—The International & Great Northern Railroad has placed its order for 1000 cars of various types with the Mt. Vernon Car Company, and for these the steel will be rolled at Chicago. Railroad work is also prominent among the other structural tonnages placed and under consideration, including 359 tons for a bridge for the Milwaukee, taken by the American Bridge Company; 495 tons for the Omaha, for a Mississippi River bridge, to be furnished by the Milwaukee Bridge Company; and 6000 tons on which the Burlington is taking figures for a bridge at Kansas City. The Chicago Bridge & Iron Company, bidding through the Ketler-Elliott Company, will furnish the steel for the Monroe street bridge, at Chicago. Other smaller contracts taken by the Milwaukee Bridge Company and the American Bridge Company, involving something over 500 tons, are also reported. The structural situation appears to be somewhat stronger, and the mills have been taking contracts for the third quarter with little or no questioning of the 1.20c., Pittsburgh, price. For contracts of average tonnage we continue to quote for Chicago delivery from mill 1.389c.

The sales of structural shapes out of store have made a somewhat better showing in the last week, but improvement is not sufficiently marked to indicate a relief from the prevailing stress in the conditions of building. We quote for Chicago delivery of structural steel out of stock 1.75c.

Plates.—The business in plates has again fallen below the volume necessary to sustain the continuous operation of local mills. Such orders as have been taken include a round lot of bridge girder plates and 2000 tons for Canadian delivery. The small volume of business materializing cannot be charged to the makers because of failure to offer concessions. We quote for Chicago delivery from mill 1.289c. to 1.339c.

We quote for Chicago delivery of plates out of stock 1.75c.

Sheets.—The price of galvanized sheets moves upward with leaps and bounds. Those mills still willing to quote on new inquiries are asking a minimum of 5c., Pittsburgh, for No. 28 galvanized, and quotations as high as 5.25c. are reported. The leading interest is quoting upon no one basis and is limiting its sales to old customers. A similar policy is being adhered to by other mills. The anomalous situation obtains in which mill prices are higher than store quotations. The substitution of terne plate and black sheets in the heavier gauges for galvanized is augmenting somewhat the sales of these products, but in the case of black sheets the weakness of the market can scarcely be concealed. An additional 2000 tons of sheet bars for Great Britain has been placed here. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.489c.; No. 28 black, 1.889c. to 1.939c.; No. 28 galvanized, 5.15c. to 5.439c.

Following the trend of the market, yet holding prices within bounds that will not check the free movement of stock, jobbers have advanced prices for galvanized sheets to 4.75c. The fact that this is still below the level of mill prices suggests the possibility of a still further advance. We quote for Chicago delivery from jobbers' stocks as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.55c.; No. 28 galvanized, 4.20c.

Bars.—Bar-iron mill operations were reduced last week to a minimum, nearly all of the local makers being shut down. The price, however, holds on the basis of 1.20c., Pittsburgh. But little progress has been made in the closing of implement-bar contracts, though some of the smaller of these interests have accepted six months contracts to January 1. Thus far there appears to have been no exception to the producers' proposition, but the real issue is still to be met. One mill has signified its intention of accepting business through the year with an advance to 1.25c. for the first half period. New work calling for reinforcing bars appears limited, but one inquiry for 1000 tons is noted. We quote for mill shipments as follows: Bar iron, 1.20c.; soft steel bars, 1.389c.; hard steel bars, 1.20c.; shafting, in carloads, 65 to 68 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off, and in carloads, 62 per cent. off.

Rivets and Bolts.—Indications are that negotiations with the implement interests concerning their bolt and nut contracts will reach a conclusion this week, and the status of the entire market revolves about the basis upon which this trading is concluded. There is little occasion for doubting that the market will show an upward reaction from the prices made at that time. There is a limited inquiry for rivets for third quarter and last half, and some contracting is known to have been done. Quotations are as follows: Carriage bolts up to ⅝ x 6 in., rolled thread, 80-10; cut thread, 80-5; larger sizes, 75-15; machine bolts up to ⅝ x 4 in., rolled thread, with hot pressed square nuts, 80-15; cut thread, 80-10; larger sizes, 80; gimlet points coach screws, 85; hot pressed nuts, square, $6.40 off per cwt.; hexagon, $7.30 off per cwt. Structural rivets, ¾ to 1¼ in., 1.45c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 2c.; boiler rivets, 2.10c.; machine bolts up to ⅝ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ⅝ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square, $6, and hexagon, $6.70 off per cwt.

Wire Products. — Another increase in the spread asked for galvanized wire has been made, bringing this differential to 80c. instead of 60c. In other respects the wire trade is without special feature. We quote to jobbers as follows: Plain wire, No. 9 and coarser, base, $1.589; wire nails, $1.739; painted barb wire, $1.789; galvanized barb wire, $2.539; polished staples, $1.789; galvanized staples, $2.539; all Chicago.

Cast-Iron Pipe.—Contracts are being closed at Berwyn, Ill., for 1100 tons and at Area, Ill., for 300 tons. Lettings last week included 200 tons at Kimball, Neb.; 300 tons at Sydney, Mont., and 100 tons at Westphal, Ill. Makers have enjoyed a fair run of small orders and the closing of a number of season contracts is reported. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $25.50; 6 to 12 in., $23.50; 16 in. and up, $23, with $1 extra for gas pipe.

Old Material.—From the standpoint of number of transactions the scrap market shows a lesser activity, if any change can be discerned, due in part to a somewhat greater reticence in disposing of material at the prices obtainable. For none of the items in the list is there any special demand, so that the slightly firmer attitude of the selling contingent has had but little opportunity to display itself, and, as reflected in prices, is not quotable. Scrap offerings from the railroads this week include 1500 tons from the Wabash, 1800 tons from the Milwaukee, 3100 tons from the Santa Fé, 1150 tons from the Monon, 1000 tons from George W. Jennings, 550 tons from the Alton and about 900 tons of carwheels from the Soo Line. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$12.25 to $12.50
Old steel rails, rerolling	10.25 to 10.75
Old steel rails, less than 3 ft	10.00 to 10.50
Old carwheels	10.00 to 10.25
Heavy melting steel scrap	9.50 to 9.75
Frogs, switches and guards, cut apart	9.50 to 9.75
Shoveling steel	9.00 to 9.25
Steel axle turnings	7.00 to 7.25

Per Net Ton

Iron angles and splice bars	$11.50 to $12.00
Iron arch bars and transoms	12.00 to 12.50
Steel angle bars	8.50 to 8.75
Iron car axles	13.50 to 14.00
Steel car axles	10.25 to 10.50
No. 1 railroad wrought	9.00 to 9.25
No. 2 railroad wrought	8.25 to 8.75
Cut forge	8.25 to 8.75
Steel knuckles and couplers	8.50 to 8.75
Steel springs	9.00 to 9.25
Locomotive tires, smooth	8.50 to 9.00
Machine shop turnings	5.50 to 5.75
Cast borings	5.00 to 5.50
No. 1 busheling	7.25 to 7.50
No. 2 busheling	6.00 to 6.50
No. 1 boilers, cut to sheets and rings	5.50 to 6.00
Boiler punchings	8.25 to 8.50
No. 1 cast scrap	9.00 to 9.25
Stove plate and light cast scrap	8.00 to 8.25
Grate bars	7.50 to 7.75
Railroad malleable	8.25 to 8.50
Agricultural malleable	7.25 to 7.50
Pipes and flues	6.25 to 6.75

Philadelphia

PHILADELPHIA, PA., June 8, 1915.

In most directions the demand for miscellaneous steel products continues to hold up and here and there betterment is shown. Large transactions which make for heavy tonnage, however, are few. It is pointed out that the railroads are steadily buying miscellaneous products, such as bars, however slow they may be in the buying of rails, cars and locomotives. Some fear is expressed that there will be a further curtailment of ocean freight space which will restrict exports. Since the Lusitania was lost, extra vessels have been withdrawn from service by their owners, and the British Government has taken others. The making of contracts for third quarter is going on steadily and there is some inquiry for the fourth, but the mills are reluctant to commit themselves so far ahead at present prices. Bars and structural shapes show no deviations in price, but plates continue somewhat weak despite the demand from car and ship builders. Negotiations are pending for 30,000 to 40,000 tons of pig iron with a nearby mill. The demand for foundry iron continues to be for small lots, but the aggregate is better. Coke and old material are quiet.

Iron Ore.—In the week ended June 5 the arrivals at this port consisted of 4750 tons from Cuba and 5844 tons from Spain.

Pig Iron.—Negotiations either have been closed, or are in progress of closing, involving the purchase of 30,000 to 40,000 tons of basic iron by an eastern Pennsylvania mill. None of the parties involved is willing to talk at this time, but that some of the business has been closed is unquestioned, and it is also known that $13.50 to $13.75 has been paid. Makers of basic are of the opinion that they should obtain $14, and one seller is holding for that price. Foundry irons have been quiet, but there has been, nevertheless, a little improvement over the preceding week. One of the better inquiries received was from a Trenton consumer, who wants 1000 tons, equally divided between No. 2X and No. 2 plain. Virginia irons have been quieter and deliveries a trifle lighter. In steel-making iron the only feature of consequence has been the activity already referred to, although there is some interest in basic on the part of small buyers, but makers are not anxious for business for future delivery at the prices which have prevailed. The demand for standard low phosphorus is slightly better and steady. Quotations for standard brands for early delivery in buyers' yards in this district are as follows:

Eastern Penna. No. 2 X, foundry	$14.25 to $14.50
Eastern Penna. No. 2 plain	14.00 to 14.25
Virginia, No. 2 X, foundry	15.25 to 15.75
Virginia No. 2 plain	15.00 to 15.25
Gray forge	13.25 to 13.50
Basic	13.50 to 13.75
Standard low phosphorus	20.50 to 21.00

Ferroalloys.—Except an occasional carload of 80 per cent. ferromanganese, which commands $100, seaboard, there is little doing. Last week 710 tons arrived here from England. There is no change in 50 per cent. ferrosilicon, which is quoted at $71 to $73, Pittsburgh, according to quantity.

Bars.—Specifications continue to come out in good volume, but new business is in no way exceptional. The railroads are taking steel bars steadily and thereby causing considerable satisfaction, however inactive they may be in other directions. The mills have closed some contracts for the last half at 1.25c., Pittsburgh, or 1.40c., Philadelphia. Iron bars are sold at 1.17½c., Philadelphia, or 1.10c., mill, but some makers are asking 1.22½c. delivered here. One says his business is more active than at any time since 1907, part of which is due to exports to Greece and Spain. The entrance of Italy into the war is responsible for these orders which are obtained through an import house doing business in those countries.

Plates.—Conditions vary with different makers. One continues to operate at 80 to 85 per cent. of capacity and is receiving a fair influx of miscellaneous orders; with another the market is quiet except for specifications against contracts, and a third is not running his mill this week. Requests for third and fourth quarter contracts are more numerous on the part of consumers, but makers are not willing to tie themselves up for the final months of the year. They have taken contracts for the third quarter at $1 advance over the present asking price for this quarter, or at 1.40c., Philadelphia. The quotations for prompt shipment range from 1.30c. to 1.35c., Philadelphia.

Rails.—The Southern Railway is in the market for nearly 6000 tons of rails. The Norfolk & Western recently placed an order for 2500 tons with an Eastern mill.

Structural Material.—The market is without important change. An eastern Pennsylvania mill had a good month on old specifications, but did not book any new business of individual prominence. While 1.359c., Philadelphia, is quoted for this quarter and usually paid, a case is known where a prospective buyer refused to consider that price and presumably found a lower price.

Sheets.—This product is moving better than most others of a staple character, yet the price has not advanced beyond 1.459c., Philadelphia for No. 10 blue annealed sheets, at which level it has been for several weeks. There is more booking for third quarter and

some effort to place for the fourth, but the mills are holding off in the case of the further delivery.

Billets.—The market is quiet and unchanged at $22.02, Philadelphia. Export inquiries continue to appear, but do not always result in sales, and business promises to be further restricted by the withdrawal of more freight vessels from the Transatlantic service. Shipments to Glasgow, in particular, are affected.

Coke.—Both foundry and furnace coke are moving quietly. Prices are firm. Greater strength is looked for if the expected shortage of labor in the coke districts develops. Quotations are prompt and June furnace coke range from $1.55 to $1.60 per net ton at oven, with contract at $1.75. Prompt foundry ranges from $2 to $2.40 and contract at $2.20 to $2.50. Freight rates from the principal producing districts are as follows: Connellsville, $2.05; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—Sellers are in a waiting attitude and altogether there is but little change in the market. They say that in their judgment the 27,000 tons of scrap from Panama, the exportation of which to any belligerent country will not be permitted by the Government, is a yard proposition. Before it can be used it will have to be sorted, sheared and otherwise prepared. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$11.00 to $11.25
Old steel rails, rerolling	11.50 to 12.00
Low phos. heavy melting steel scrap	14.50 to 15.00
Old steel axles	14.00 to 14.50
Old iron axles	17.50 to 18.00
Old iron rails	15.00 to 15.50
Old carwheels	11.50 to 12.00
No. 1 railroad wrought	13.00 to 13.25
Wrought-iron pipe	10.75 to 11.00
No. 1 forge fire	8.50 to 9.00
Bundled sheets	9.00 to 9.50
No. 2 busheling	7.75 to 8.25
Machine shop turnings	8.50 to 8.75
Cast borings	8.00 to 8.50
No. 1 cast	12.25 to 12.50
Grate bars, railroad	9.00 to 9.25
Stove plate	9.00 to 9.25
Railroad malleable	9.50 to 10.00

Cleveland

CLEVELAND, OHIO, June 8, 1915.

Iron Ore.—One Eastern company has purchased 100,000 tons of Lake Superior ore, but there is not much prospect of additional orders for round lots being taken in the East in the near future. In the Central West sales are limited to very small lots. We quote base ore prices as follows, delivered to lower lake ports: Old range Bessemer, $3.75; Mesaba Bessemer, $3.50; old range non-Bessemer, $3; Mesaba non-Bessemer, $2.85.

Pig Iron.—There are two new inquiries from Indiana consumers, one for 3000 tons of foundry iron and the other for 3000 tons of malleable. In this immediate territory the market continues dull but shipments are very satisfactory. Most foundries are carrying small stocks and furnaces are getting some rush shipment orders. While the ruling quotations on No. 2 foundry iron for Cleveland delivery have been $13.25 to $13.50 for some time the market is not firm and this grade can be purchased as low as $13, delivered. For out of town shipment $12.50 is the ruling price. Valley quotations on No. 2 foundry range from $12.50 to $12.75. Southern iron is not firm and some Tennessee iron that has been held at $9.75 is now being offered at $9.50, Birmingham basis, for No. 2 for prompt shipment. We note the sale of 200 tons of Southern charcoal iron to a Youngstown consumer. We quote delivered Cleveland as follows:

Bessemer	$14.65
Basic	13.55
Northern No. 2 foundry	$13.00 to 13.50
Southern No. 2 foundry	13.50 to 14.00
Gray forge	12.75
Jackson Co. silvery 8 per cent. silicon	16.37 to 16.62
Standard low phos. at furnace	19.75 to 20.00

Coke.—There is some inquiry for foundry coke contracts, although the market has quieted down somewhat, owing to the fact that the majority of consumers are now under contract. A large tonnage has been booked during the last three or four weeks. We quote standard Connellsville foundry coke at $2.25 to $2.50 per net ton at oven for prompt shipment and contracts. Furnace coke is quiet, quotations ranging from $1.50 for spot shipment to $1.65 and $1.75 for the last half.

Finished Iron and Steel.—There is considerable contract demand for steel bars, plates and structural material for the third quarter and last half, and the market is firm, the advance in prices for future delivery being maintained. One interest is not quoting structural material for delivery beyond the third quarter. Specifications continue to come out in very satisfactory volume. New inquiry for steel for making war material is lacking but some new business in shrapnel shells and small ammunition is pending. There is an inquiry from France for 4000 tons of steel rails and 3745 cars, 2000 ten-ton box cars, 1000 twenty-ton flat cars, 400 dump cars and the remainder passenger coaches. The Lackawanna Steel Company booked 750 tons of rails for Ann Arbor Railroad. The Massillon Bridge & Structural Company has taken 300 tons for a building for the Standard Marble Works, Cincinnati, and an inquiry is out for 1000 tons for an addition to the Hotel Statler, Cleveland. Plate prices are well maintained at 1.15c. to 1.20c., Pittsburgh, for early shipment. The demand for sheets has quieted down somewhat. Several Ohio mills are not making galvanized sheets, on which there is a wide range of quotations from a minimum of 4.25c. for No. 28. We quote black sheets at 1.75c. to 1.80c. Ohio mill for No. 28 and blue annealed at 1.30c. to 1.35c. for No. 10. Iron bars, which are quoted at 1.15c., Pittsburgh, are very dull. Hard steel bars are quoted at 1.10c. to 1.15c., Pittsburgh. We quote warehouse prices at 1.80c. for steel bars and 1.90c. for plates and structural material.

Bolts, Nuts and Rivets.—There is a fair demand for bolts and nuts, and the new prices are being well maintained. Some third-quarter contracts have been placed. Rivet consumers have not yet commenced making third-quarter contracts. We quote rivets at 1.40c. to 1.45c., Pittsburgh, for structural and 1.50c. to 1.55c. for boiler in carload lots. Bolt and nut discounts are as follows: Common carriage bolts, ⅜ x 6 in., smaller or shorter, rolled thread, 80 and 10 per cent.; cut thread, 80 and 5 per cent.; larger or longer, 75 and 15 per cent.; machine bolts with h. p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 80 and 15 per cent.; cut thread, 80 and 10 per cent.; larger or longer, 80 per cent.; coach and lag screws, 85 per cent.; square h. p. nuts, blank or tapped, $6.40 off; hexagon h. p. nuts, blank or tapped, $7.30 off; c.p.c. and t. square nuts, blank or tapped, $6.10 off; hexagon ⅝ in. and larger, $7.60 off; 9/16 and smaller, $8.30 off; semi-finished hexagon nuts, ⅝ in. and larger, 85, 10, 10 and 5 per cent.; 9/16 and smaller, 85, 10, 10, 10 and 5 per cent.

Old Material.—Some steel-making scrap is being sold for August delivery, but consumers appear to be well covered for the next few weeks and dealers find it hard to dispose of scrap that they wish to move quickly. The supply of scrap is greater than the demand, and material is being shipped to the mills faster than wanted. The surplus is partly due to the large tonnages thrown on the market lately by the railroads. In spite of the large supply and rather limited buying the market is fairly firm, the only pronounced weakness being in borings, which have declined 25c. a ton. A local mill has taken some heavy milling steel at $11. We quote, f.o.b. Cleveland, as follows:

Per Gross Ton

Old steel rails, rerolling	$11.00 to $11.75
Old iron rails	12.00
Steel car axles	12.00 to 12.50
Heavy melting steel	10.50 to 11.00
Old carwheels	9.75 to 10.00
Relaying rails, 50 lb. and over	22.50
Agricultural malleable	8.00 to 8.50
Railroad malleable	10.00 to 10.25
Steel axle turnings	8.75 to 9.00
Light bundled sheet scrap	8.00 to 8.50

Per Net Ton

Iron car axles	$14.50 to $15.00
Cast borings	6.00 to 6.25
Iron and steel turnings and drillings	5.50 to 5.75
No. 1 busheling	8.50 to 8.75
No. 1 railroad wrought	9.25 to 9.50
No. 1 cast	9.75 to 10.25
Stove plate	7.75 to 8.00

Buffalo

BUFFALO, N. Y., June 8, 1915.

Pig Iron.—Shipments on contracts continue to increase in volume, but there has been no change from the exceedingly light buying of the past few weeks. It is reported that at least one or two quite heavy sales have been consummated, although particulars are withheld. The anticipation of shipment dates on contracts is becoming more pronounced, in a few instances orders being received for iron intended for use in September. At least one foundry has taken out its entire order originally placed for last half shipment. There is a more general trend toward a stiffening of prices. We continue last week's quotations as closely approximating the current market for last half delivery, f.o.b. furnace, Buffalo, as follows:

No. 1 foundry	$13.00 to $13.25
No. 2 X foundry	12.75 to 13.25
No. 2 plain	12.75 to 13.00
No. 3 foundry	12.50 to 12.75
Gray forge	12.50
Malleable	12.75 to 13.25
Basic	13.25 to 13.75
Charcoal, regular grades and analysis	15.75 to 17.25
Charcoal, special grades and analysis	19.00 to 20.00

Finished Iron and Steel.—Inquiry has been good, particularly for bars and small shapes. Specifications on contracts expiring at the end of the second quarter have been coming in freely for steel bars, structural shapes, plates and steel pipe. There has been quite a good deal of contracting for steel products for third quarter delivery and so far as can be learned most of the business has been placed at 1.25c., Pittsburgh base, although it is reported that in one or two special instances, where the tonnage was very attractive, 1.20c. was made. It is also understood that some contracts have been closed on the basis of 1.25c. for third quarter and 1.30c. for fourth quarter. There has been quite active buying of cold finished products and it is understood that 68 per cent. off is the minimum for third quarter contracts. Where such contracts have been closed for the last half an advance of one point for fourth quarter has been asked. Bids go in on June 12 for 800 tons for the Cloverleaf Milling Company, this city. The placing of contract for rebuilding the Chicago street viaduct, Buffalo, requiring about 2000 tons, for which the American Bridge Company was low bidder, may be countermanded by the City Council on account of complications regarding employment of Buffalo labor. The Lackawanna Bridge Company last week received contract for 2700 tons additional steel for the grandstand at Sheepshead Bay motordrome. The Oswego Falls Pulp & Paper Company has placed 350 tons for its power plant at Fulton with the Syracuse Bridge Company. The Farrar Iron & Steel Company, Buffalo, has a small tonnage for the Buffalo Meter Company and for a group of 55 fireproof garage buildings for S. M. Flickinger, Buffalo.

Old Material.—Shipments on heavy melting steel contracts are still moving in good volume and prices for this commodity are firm at $10.75 to $11. Several good sized inquiries are out for old carwheels, but no large tonnages are obtainable. One dealer reports an offer of $12 per gross ton, Buffalo, for several hundred tons. Borings and turnings are moving freely, but prices have not been advanced. The demand for wrought scrap and malleable is lighter than a week ago and no sales of consequence in either commodity are reported. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$10.75 to $11.00
Low phosphorus steel	13.00 to 13.50
No. 1 railroad wrought scrap	10.50 to 11.00
No. 1 railroad and machinery cast	10.50 to 11.00
Old steel axles	12.00 to 12.50
Old iron axles	16.00 to 16.50
Old carwheels	11.50 to 12.00
Railroad malleable	9.50 to 10.00
Machine shop turnings	5.75 to 6.25
Heavy axle turnings	8.50 to 9.00
Clean cast borings	6.75 to 7.00
Old iron rails	11.00 to 11.50
Locomotive grate bars	9.00 to 9.50
Stove plate (net ton)	8.25 to 8.75
Wrought pipe	7.00 to 7.50
Bundled sheet scrap	7.25 to 7.75
No. 1 busheling scrap	8.50 to 9.00
No. 2 busheling scrap	6.50 to 7.00
Bundled tin scrap	9.00

Cincinnati

CINCINNATI, OHIO, June 9, 1915.—(*By Wire.*)

Pig Iron.—Very little iron is being sold for future delivery, but there is the usual run of small orders for prompt shipment. A number of scattered inquiries are out, including all grades, but they are mainly for limited tonnages, issued in a number of cases to test the market. A melter in Evansville, Ind., who has bought heavily this year, is expected to close this week for 1500 tons of analysis iron, and both Northern and Southern producers are competing for the business. A central Ohio firm is asking for 500 tons of standard Bessemer for last half shipment. Prices are unchanged, but there appears to be a willingness to sell at the present prompt shipment quotation of $9.50, Birmingham basis. Some business at this figure has been taken with shipments spread over the remainder of the year. The foundry melt is about on an even keel with the past six-week records, and there are no indications of an increase. It is feared that the unusual spelter situation will cut down the production of galvanized sheets and thus reduce the consumption of basic iron, but this contingency seems unlikely as the mills are advising their customers to substitute a heavier gauge of black sheets, when possible, and this will necessarily increase instead of decrease the consumption of pig iron and scrap. Northern foundry, basic and malleable, are quoted at $12.50, Ironton, for either prompt or last half shipment. The Ohio silvery irons are quiet and quotations are unchanged. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft	$12.90 to $13.40
Southern coke, No. 2 f'dry and 2 soft	12.40 to 12.90
Southern coke, No. 3 foundry	11.90 to 12.40
Southern No. 4 foundry	11.40 to 11.90
Southern gray forge	10.90 to 11.40
Ohio silvery, 8 per cent. silicon	16.01 to 16.26
Southern Ohio coke, No. 1	14.76 to 15.26
Southern Ohio coke, No. 2	13.76 to 14.26
Southern Ohio coke, No. 3	13.51 to 13.76
Southern Ohio malleable Bessemer	13.76 to 14.01
Basic, Northern	13.76 to 14.01
Lake Superior charcoal	16.20 to 17.20
Standard Southern carwheel	26.90 to 27.40

(*By Mail*)

Coke.—Foundry coke buying is progressing at a rate that is ahead of the previous week's record, but the total amount of business now being booked is not up to standard. It is expected that there will necessarily be a large number of foundry contracts made in June with shipments commencing within the next 30 days and extending through the following 12 months. Quite a number of foundries will carry over enough coke on old contracts to run them through July. Connellsville 48-hr. coke is stationary around $1.50 per net ton at oven for prompt shipment and from 10c. to 20c. a ton higher on contract business. Foundry coke is quoted all the way from $2.25 to $2.50 at oven.

Old Material.—No change is reported in the situation and prices on all grades are weak. The jobbing foundries are disposed to buy supplies for only immediate requirements and there are no indications that the market will change. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices, f.o.b. at yards:

Per Gross Ton

Bundled sheet scrap	$6.25 to $6.75
Old iron rails	10.50 to 11.50
Relaying rails, 50 lb. and up	19.25 to 19.75
Rerolling steel rails	9.75 to 10.25
Melting steel rails	8.50 to 9.00
Heavy melting steel scrap	8.50 to 9.00

Per Net Ton

No. 1 railroad wrought	$8.50 to $9.00
Cast borings	4.50 to 5.00
Steel turnings	4.50 to 5.00
Railroad cast scrap	9.00 to 9.50
No. 1 machinery cast scrap	10.25 to 10.75
Burnt scrap	6.50 to 7.00
Old iron axles	13.50 to 14.00
Locomotive tires (smooth inside)	8.50 to 9.00
Pipes and flues	5.75 to 6.25
Malleable and steel scrap	7.00 to 7.50
Railroad tank and sheet scrap	5.00 to 5.50

Finished Material.—Galvanized sheets are fast becoming a luxury, according to the opinion of users who did not contract for a supply several weeks ago. The

mills in this territory are quoting 5c., Pittsburgh basis, for No. 28 and it is stated that this quotation will doubtless be advanced before the week is over. Many users of sheets are substituting a heavier gauge of black sheets, which they are painting in preference to paying the high price for galvanized sheets. No. 28 black sheets are still quoted here at 1.80c., Pittsburgh basis. Steel bars remain at 1.20c., Pittsburgh, and there is not much call for them in this territory at present. Hoops and bands are quiet. Jobbers of wire nails and barb wire report some improvement in the situation.

St. Louis

ST. LOUIS, MO., June 7, 1915.

Pig Iron.—A somewhat better tone exists, but sales have not materially increased at least so far as future contracts are concerned. The lowest price at which No. 2 Southern foundry can be obtained in this market is $9.75, Birmingham. The improvement in tone has been largely due to the disposition of foundrymen to renew annual contracts for coke on larger quantities than last year at this time.

Coke.—While there has been little business for immediate delivery, foundrymen, particularly those whose contracts expire July 1, have contracted freely for their annual supplies. There has been a noticeable tendency to increase the quantities, due apparently in part to the fact that coke is lower than last year at this time and in part to a belief that the future promises good business within a short time. Some uncertainty has been injected into the market by the lighting of the by-product ovens of the Laclede Gas Light Company, but these are not yet an immediate factor and actual results cannot be forecasted very accurately, at least as to the effect on price. By-product coke is quotable at $5.20 delivered St. Louis.

Finished Iron and Steel.—There is a firmer tone with some increase in the aggregate of the sales. The Burlington's new bridge at Kansas City requiring 6000 tons and the Municipal free bridge at St. Louis, requiring 24,000 tons, are occupying the center of the stage, as bids will soon be asked. Stocks out of warehouse is moving as freely as ever and prices are quoted as follows: Soft steel bars, 1.70c.; iron bars, 1.65c.; tank plates, 1.80c.; structural material, 1.80c.; No. 10 blue annealed sheets, 2c.; No. 28 black sheets, cold rolled, one pass, 2.55c.; No. 28 galvanized sheets, black sheet gauge, 4.85c., this last subject to the present vagaries of the zinc market.

Old Material.—There has been a slight improvement in tone. Relaying rails are considerably firmer under a decided increase in inquiries. Dealers expecting early improvement are holding firmly at quoted prices. Lists out include 400 tons from the Kansas City Southern and 5000 tons from the Southern Railway. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton

Old iron rails	$10.00 to $10.50
Old steel rails, rerolling	9.50 to 10.00
Old steel rails, less than 3 ft.	10.25 to 10.75
Relaying rails, standard section, subject to inspection	22.00 to 23.00
Old carwheels	8.75 to 9.25
No. 1 railroad heavy melting steel scrap	8.75 to 9.25
Shoveling steel	7.75 to 8.25
Frogs, switches and guards cut apart	8.75 to 9.25
Bundled sheet scrap	5.50 to 6.00

Per Net Ton

Iron angle bars	$10.00 to $10.50
Steel angle bars	7.75 to 8.25
Iron car axles	13.50 to 14.00
Steel car axles	9.50 to 10.00
Wrought arch bars and transoms	10.75 to 11.25
No. 1 railroad wrought	7.50 to 8.00
No. 2 railroad wrought	7.50 to 8.00
Railroad springs	7.75 to 8.25
Steel couplers and knuckles	7.75 to 8.25
Locomotive tires 42 in. and over smooth inside	8.50 to 9.00
No. 1 dealers' forge	6.75 to 7.25
Mixed borings	4.50 to 5.00
No. 1 busheling	7.00 to 7.50
No. 1 boilers, cut to sheets and rings	5.75 to 6.25
No. 1 railroad cast scrap	7.75 to 8.25
Stove plate and light cast scrap	6.25 to 6.75
Railroad malleable	5.75 to 6.25
Agricultural malleable	5.25 to 5.75
Pipes and flues	5.50 to 6.00
Railroad sheet and tank scrap	5.75 to 6.25
Railroad grate bars	6.25 to 6.75
Machine shop turnings	4.75 to 5.25

Birmingham

BIRMINGHAM, ALA., June 7, 1915.

Pig Iron.—The present is one of the quietest periods known in the Southern iron market. There is a dearth of inquiry, while sales are scattered and mostly small lots. The leading interest continues to hold out for $10, but with few takers. One other interest is doing likewise and with somewhat similar result, its bookings for the past two weeks consisting of only a few hundred tons, mostly carload lots. Spot iron is freely offered in more than one quarter for $9.75, and an unlimited amount could be procured at that figure. There is little doubt, if the bookings also went well into the future, that the same figure would hold. While some $9.50 iron has recently been sold for Northern delivery, as far as can be ascertained only one concern has done business on that basis and very little at that. The customer is understood to have been a gilt-edged one and a cash payer; hence the concession. It would be unfair to assume that much $9.50 iron can be had or that it is a basis. The buyer must be an unusually attractive one. The furnaces are working splendidly, with dry weather, and the output is largely of the higher grades. The increase in make in May was largely in basic. The disposition to make further purchases for speculation, provided concessions are offered, is manifest. Of such iron, 100,000 tons is on Alabama yards now; the price paid was $9.50. Stocks were reduced during May about 35,000 tons, the ratio that has maintained over several months. We quote for spot and future delivery, per gross ton, f.o.b. Birmingham furnaces, as follows:

No. 1 foundry and soft	$10.25 to $10.50
No. 2 foundry and soft	9.75 to 10.00
No. 3 foundry	9.25 to 9.50
No. 4 foundry	9.00 to 9.25
Gray forge	8.75 to 9.00
Basic	9.75 to 10.00
Charcoal	21.00 to 21.25

Cast-Iron Pipe.—The water and gas pipe factories report a continuation of fair to satisfactory conditions, with order books in good shape and prices firm. The American Cast Iron Pipe Company is meeting with much success in selling its 16-ft. lengths throughout the country. The installation of this department of manufacture was made several months ago. This company, which secured a recent Chicago contract for 2600 tons, is adding a handsome office structure to its plant equipment. We quote, f.o.b. pipe shop yards, per net ton, as follows: 4-in., $20; 6-in. and upward, $18, with $1 added for gas pipe. These prices are firmly maintained.

Coal and Coke.—The output of beehive coke has somewhat decreased, while prices have shown a disposition to sag. There is a large movement to Texas points. We quote beehive coke, per net ton, f.o.b. oven, as follows: Furnace, $2.50 to $2.75; foundry, $2.75 to $3.25, the usual basis being $3. By-product coke is quoted 50c. under. The Sloss-Sheffield Steel & Iron Company has been awarded a 200,000-ton coal contract and the Alabama Company a 140,000-ton contract by the Seaboard Air Line. Recent coal contracts are understood to have been entered at extremely low figures.

Old Material.—While scrap is moving but slowly and dealers are careful in adding to stocks, prices are reasonably firm, and there is prospect of better conditions. We quote, per gross ton, f.o.b. dealers' yards, as follows:

Old iron axles	$13.00 to $13.50
Old steel axles	12.50 to 13.00
Old iron rails	12.50 to 13.00
No. 1 railroad wrought	8.50 to 9.00
No. 2 railroad wrought	7.50 to 8.00
No. 1 country wrought	8.00 to 8.50
No. 1 machinery cast	8.25 to 8.50
No. 1 steel scrap	8.00 to 8.25
Tram carwheels	8.25 to 8.50
Stove plate	7.00 to 7.50

The Central Steel Company, Massillon, Ohio, started the making of steel in its new plant June 7, the first ingot being poured on that day.

New York

NEW YORK, June 9, 1915.

Pig Iron.—New business is still quite unsatisfactory. In New Jersey two foundries have bought a total of about 2500 tons and in New England some business has been taken by Buffalo furnaces. But there is little indication that the demand for foundry iron in June and July will be more than the occasional filling-in orders that have been the rule in the past month. Furnace companies are not counting too much on the fact that some foundries recently decided that their large purchases of March need supplementing. Canada has taken more low-phosphorus iron from a northern New York furnace for war work and Japan has been figuring on 500 tons of low-phosphorus metal. Some 10,000 tons more of speculative iron, mostly Southern, has been taken here. We quote at tidewater as follows: No. 1 foundry, $14.50 to $14.75; No. 2 X, $14 to $14.50; No. 2 plain, $13.75 to $14; Southern iron, $14.50 to $14.75 for No. 1 and $14.25 for No. 2.

Ferroalloys.—Arrivals of ferromanganese under special license from the British government continue to be reported, the receipts at Philadelphia, Baltimore and New Orleans in the past week or ten days aggregating over 3000 tons. It is pointed out that in the six months since the embargo was placed last November a total of about 20,000 tons of the alloy has been received for consumption in this country against a normal importation of over 50,000 tons based on a five-year average. It is argued from this that the present quotation of $100, seaboard, will advance rather than recede as the war continues. There is no definiteness as to the amount of alloy still to be released and all sales are subject to license of the British government for shipment. The bulk of that now being received is being distributed on existing contracts, the specifications on which are insistent. Sales are being made, however, of carload and larger lots, the inquiries being frequent. Some spot material is reported as having gone at an advance over $100, seaboard, but any sales under this are not confirmed. An electro-metallurgical company is now producing the alloy electrolytically from Brazilian manganese ore on contract for a selling agent. The demand for 50 per cent. ferrosilicon is more active, sales and inquiries being in large volume at $71 to $73, Pittsburgh.

Structural Material.—Large projects are slow in closing, indicating difficulties in financing, but speculative as well as investment building work continue to come into the market, though generally these are not comparatively large. Prices for plain material are none the less firm at 1.20c., Pittsburgh, asked for third and 1.25c. for last quarter contracts. There is a feeling that as activity resulting from foreign business permeates through the industrial fabric, the better sentiment will bring about improvements and extensions to plants which have deferred such work indefinitely. Some of the latest offerings taking structural steel include the Mullica River bridge, Atlantic City, 550 tons; loft for the Alt Realty Company, 600 tons; Antona apartment, Riverside Drive, 800 tons; power plant addition, Manchester, N. H., Traction Company, 300 tons; Langdon loft, Houston street, 500 tons; first of a series of buildings at Edgewater, N. J., for the Aluminum Company of America, 300 tons, and further work for the Winchester Repeating Arms Company, New Haven, in charge of Westinghouse, Church, Kerr & Co., taking 1200 tons. The American Bridge Company has taken 225 tons for the Waterville work for the Maine Central; the Hinkle Iron Company, 350 tons for garage and stores, Broadway and Ninety-fifth street, for Vincent Astor and 600 tons for the Rockefeller Institute at Sixty-sixth and Extension streets; the Massillon Bridge & Structural Company, 175 tons for the Baltimore & Ohio at Indianapolis, and L. F. Shoemaker & Co., 100 tons for the New York, New Haven & Hartford. Some 250 tons for two bridges for the Norfolk & Western have been closed, and it is reported that the McClintic-Marshall Company has 2000 tons for the John A. Roebling's Sons Company, Trenton, N. J. We quote mill shipments at 1.20c., Pittsburgh, or 1.369c., New York, and from store, 1.85c. to 1.90c., New York. Desirable specifications are going at less than these prices.

Steel Plates.—Eastern mills are operating with little piled ahead on order books and the lighter mills and universal mills are in need of orders which a betterment in the structural field is needed to bring about. Much is expected shortly of the railroad placing of cars. One of the active inquiries is for 550 flat, 100 box and 10 caboose cars for the Havana Central. The Norfolk & Western passenger car equipment order was divided between the Harlan & Hollingsworth Corporation, 10 coaches, and the American Car & Foundry Company, 14 baggage, express and mail cars. We quote steel plates at 1.15c. to 1.20c., Pittsburgh, or 1.319c. to 1.369c., New York, and from store, 1.85c. to 1.90c., New York.

Iron and Steel Bars.—Buyers show no disposition to contract but jobbers and manufacturers are taking larger quantities than a few weeks ago. The situation in general is healthy in that consumers accept the growing firmness in third quarter prices as justifiable. A widening demand from various foreign countries for finished steel, including steel and iron bar products, is reported. Among others may be mentioned 1000 kegs of spikes sold for Argentina. We quote mill shipments of steel bars at 1.20c., Pittsburgh, or 1.369c., New York, and refined iron bars, 1.20c. to 1.25c., New York. Out of store in New York iron and steel bars are 1.80c. to 1.85c.

Cast-Iron Pipe.—A decided lull is being experienced in municipal lettings. Nothing of importance in this class of business is in sight in this territory. Private buyers continue to purchase quite freely. Inquiries for export are numerous, even coming from remote sections of the world, but it cannot be ascertained that any contracts of importance have been closed because of difficulty in making financial arrangements or in securing vessel accommodations. Prices are firmly maintained. Carload lots of 6-in., class B and heavier, are held at $22 to $22.50 per net ton tidewater, while class A and gas pipe take an extra of $1 per ton.

Old Material.—The demand for heavy melting steel scrap and rolling-mill material shows no improvement. Consumers are either out of the market or are naming offers below the views of holders. Railroad lists coming out this month are quite heavy, and the supply of scrap from other sources is large; hence it might be expected under such circumstances that prices would give way. Thus far, however, holders are quite generally maintaining their ground, having faith in a better condition of business in the near future. Inquiries are being received for scrap to be sent to France and China, but no transactions have yet resulted. Brokers' quotations to local dealers and producers, per gross ton, New York, are as follows:

Old girder and T rails for melting	$8.75 to	$9.00
Heavy melting steel scrap	8.75 to	9.00
Relaying rails	19.00 to	19.50
Rerolling rails (nominal)	8.75 to	9.00
Iron car axles (nominal)	15.25 to	15.75
Steel car axles (nominal)	11.75 to	12.25
No. 1 railroad wrought	10.50 to	10.75
Wrought-iron track scrap	9.50 to	9.75
No. 1 yard wrought, long	9.50 to	9.75
No. 1 yard wrought, short	9.00 to	9.25
Light iron	3.25 to	3.75
Cast borings	5.50 to	5.75
Wrought turnings	6.00 to	6.25
Wrought pipe	8.00 to	8.25

While foundries generally are buying conservatively, a few of the larger melters in this vicinity are in the market for 200 to 500 tons. Quotations to consumers on cast scrap are as follows, per gross ton, New York:

Old carwheels	$9.25 to	$9.50
No. 1 heavy cast, broken up	11.00 to	11.50
Stove plate	8.00 to	8.25
Locomotive grate bars	7.50 to	8.00
Malleable cast (railroad)	7.50 to	8.00

John Leonard & Co., Inc., 149 Broadway, New York, dealers in old material, have purchased from the Public Service Corporation, Newark, N. J., the equipment of 12 electric light power stations. The reason for the sale was due to changing from belt-driven and direct-connected engines to turbines. The boilers purchased include Babcock & Wilcox, Coatesville, Heine, Stirling, Cahall, Berry, Abendroth-Root, Keeler, Eddystone, etc. The engines include Ball & Wood, E. P. Allis, Watts-

Campbell, Hewes & Phillips, Westinghouse, Green, Harrisburg, Providence, Armington-Sims, Ames, etc. All the apparatus is in first class physical condition and was used in operating the plants in question until very recently. The engines vary from 25 to 500 h.p. There are a number of generators also at these stations. The purchase price of the entire material was about $25,000.

Boston

BOSTON, MASS., June 8, 1915.

Old Material.—Prices have not changed in the week. Neither producers nor dealers consider the immediate market too low, but they agree that the tendency is upward. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. Mill prices are approximately 50c. per ton higher.

Heavy melting steel	$8.25 to $8.50
Low phosphorus steel	13.75 to 14.75
Old steel axles	12.75 to 13.25
Old iron axles	20.25 to 20.75
Mixed shafting	12.00 to 12.25
No. 1 steel wrought and soft steel	8.25 to 8.75
Skeleton (bundled)	5.50 to 5.75
Wrought-iron pipe	7.00 to 7.50
Cotton ties (bundled)	5.25 to 5.75
No. 2 light	3.25 to 3.75
Wrought turnings	5.00 to 5.50
Cast borings	5.00 to 5.25
Malleable	7.50 to 7.75
Stove plate	7.00 to 7.50
Grate bars	5.25 to 5.50
No. 1 machinery cast (price to consumer)	13.00 to 13.50
No. 2 machinery cast (price to consumer)	11.50 to 12.00

British Market Quiet

American Steel Higher—Prohibition of Spelter Consumption Threatens Galvanized Trade

(*By Cable*)

LONDON, ENGLAND, June 9, 1915.

The pig-iron market remains uninteresting and business is very quiet, buyers holding back for lower prices. Shipments are poor, though they are expected to improve now that Italy has joined the Allies. Semi-finished steel is firm, and the tendency of American prices is upward though business that has been done recently was transacted at unchanged prices. The furnaces in blast are 166, against 167 a year ago. Stocks of pig iron in Connal's stores were 153,717 tons at the close of last week, against 152,998 tons one week previous.

Finished steel continues to advance. The galvanized sheet trade is endangered owing to the proposed prohibition of the consumption of spelter for galvanizing. Tin plates continue to advance and business done in quarters (14 x 18¾ and 14 x 19¼) was at 18s. 9d. ($4.56). We quote as follows:

Tin plates, coke, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 18s. 9d. ($4.56) against 18s. 6d. ($4.50) last week.

Cleveland pig-iron warrants, 65s. 10d. ($16.02) compared with 65s. 7½d. ($15.97), last week.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 66s. 3d. ($16.12), against 65s. 9d. ($16) one week ago.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £11 15s. ($57.18).

Steel ship plates, Scotch, delivered local yards, £9 15s. ($47.44).

Steel rails, export, f.o.b. works port, £8 7s. 6d. ($40.75).

Hematite pig iron, f.o.b. Tees, 102s. 6d. ($24.94).

Sheet bars (Welsh), delivered at works in Swansea Valley, £7 ($34.06).

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £9 15s. ($47.44).

Steel bars, export, f.o.b. Clyde, £10 15s. ($52.31).

Ferromanganese, f.o.b., £20 15s. ($100.98).

Ferrosilicon, 50 per cent., c.i.f., £14 ($68.13) compared with £14 5s. ($69.35) last week.

The Labor Attitude Serious—Workmen Balk at Longer Hours and Demand Advances

(*By Mail*)

LONDON, May 27, 1915.—Among manufacturers of pig iron the supplies of iron ore are attracting some attention and the executive council of the Cumberland Miners' Association has been discussing a letter from the authorities dealing with the possibility of increasing the local output. An attempt to induce the workers to raise their hours from eight to ten daily had been made, but it had failed because the men considered that there was no real need for any alteration in conditions. A renewed representation, however, seems to have forced the fact into the minds of some of them that the national safety is really in peril and there is therefore just a chance of something being done.

The wages question continues to command a supreme degree of importance, and in all directions the men continue to clamor for more and yet more money. The Cleveland mine owners met the Cleveland miners' representatives the middle of May and agreed to concede an immediate advance of 15 per cent. upon basis rates, this being in addition to the 2½ per cent. advance granted in April. Members of the Northumberland Deputies Association waited on the coal owners also in May and it was arranged that an advance of 15 per cent. should be given as a war bonus. It is probable that all the advances hitherto conceded will prove to be only stepping stones to more imperative demands.

The entire labor position is one which is giving the greatest anxiety and the members of the Glasgow and West of Scotland armaments committee announce special procedure in the field of action covered by their operations. They are convinced that important and urgent government work is being retarded in the shipyards and engineering shops by the action of the workmen and they intimate that in all cases where proof of this reaches them a fine of £1 ($4.86) will be imposed upon the offender for the first offense and handed over to the trades union, or to charity in the case of non-unionists; £2 ($9.73) for the second offense, and £3 ($14.60) for the third offense, together with instant dismissal in the last case.

Metal Market

NEW YORK, June 9, 1915.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
June	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
2	21.50	19.00	37.62½	4.90	4.82½	24.50	24.00
3	22.00	19.00	37.75	5.00	4.95	25.50	25.00
4	22.50	19.12½	38.20	5.20	5.20	26.00	25.50
5	22.50	19.25	....	5.20	5.37½	26.00	25.50
7	22.50	19.62½	39.25	5.50	5.60	26.50	26.00
8	22.50	19.62½	40.00	6.00	5.87½	26.50	26.00

Domestic buying of copper has been brisk and prices have advanced. Tin has been in heavy demand and is higher. Lead has continued to advance in a sensational manner and buyers have followed the market. The St. Louis price rules higher than that at New York. Spelter prices have continued to advance, but the demand is easier. In antimony there has been a good movement and quotations are strong.

New York

Copper.—Domestic buyers have been more active and yesterday, in particular, there was a good demand for deliveries of electrolytic over the next three or four months. Back of the activity are said to be fresh requirements for the fulfilment of war orders. The quotations yesterday for electrolytic ranged from 19.62½c. to 19.75c. cash, New York. Higher prices are predicted freely. Lake is quoted at from 19.50c. to 24c., with prime Lake about 22.50c. Exports are going forward at a fairly good rate and up to today total 7911 tons. In copper products there is a good export trade being built up with South American countries and there have been shipments to Scandinavian countries, also. The International Nickel Company announced that the base prices of monel metal, which is a natural

copper and nickel alloy, have been advanced on rods. Rounds are now 28c. per lb. and flats 29c.

Tin.—A large business has been done in tin practically every day of the week. The greatest activity was on Monday when between 500 and 750 tons changed hands. The dealing was mostly in futures, even tin for shipment from the Far East in September finding a market here. A feature of the market is the offers being made for spot metal which shows indications of becoming scarce again. On June 3 there was a large business in futures, and on the following day an equally large business in June and July deliveries from the East, sales on the latter day being made at 36.55c. Banca has sold in good quantity ex steamer now afloat. On June 7, which was the heaviest day in point of sales, June and July from the East went at 36.70c. to 37c., and tin to be transshipped at London brought 37.95c. At the close, on June 7, June delivery brought 39c. and July 38.25c., these higher prices being obtained because the deliveries are guaranteed. Spot was quoted yesterday at 40c. The buying throughout the week was almost entirely on the part of consumers. The arrivals this month total 1210 tons and there is afloat 5685 tons.

Lead.—The week has been a most unusual one, with the market agitated by daily advances of several dollars a ton. Efforts to obtain metal from independent producers have invariably been unsuccessful and the largest interest appears to be in control of the situation. After the New York price left 5c. per lb., the St. Louis quotations ruled higher than those at New York. In the latter city the prices in the open market have exceeded those quoted by the leading producer. At St. Louis 6.25c. has been asked, and it is said that 6c. has been paid. A good part of the excitement was caused by the fears of buyers who rushed into the market and bought with each advance. The New York price today is 6c. The exports this month total 2643 tons.

Spelter.—The strength of the market is unimpaired, and prompt delivery was quoted yesterday at 26.50c. to 29c. for prime Western. Brass mill special has sold at 30.50c. and very choice grades ore out of the market at 35c., or thereabout. There is still more or less uncertainty about prices. The buying has subsided and in that respect the market is easier. Some of the makers of galvanized products have temporarily gone out of business because of their lack of spelter, and users of the products are looking for substitutes. Spot spelter is almost impossible to find and probably would bring 29c. For last quarter shipment 23c. is asked. On June 2 a leading producer of sheet zinc advanced his base price ½c. to 26c. f.o.b. mill. The exports of spelter this month total 482 tons.

Antimony.—Yesterday there was a renewal of activity, and at least 250 lb. changed hands on a basis of 33c. in bond for June and July delivery. The metal, of course, was Chinese and Japanese, and the price obtained is equivalent to about 36½c. For spot, the range is from 26c. to 38c. for such small quantities as are to be had.

Old Metals.—The market is strong. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	17.50 to 18.00
Copper, heavy and wire	17.00 to 17.50
Copper, light and bottoms	14.50 to 15.00
Brass, heavy	13.00 to 13.50
Brass, light	9.50 to 10.00
Heavy machine composition	13.75 to 14.25
No. 1 yellow rod brass turnings	14.00 to 15.00
No. 1 red brass or composition turnings	12.00 to 12.50
Lead, heavy	5.50
Lead, tea	5.25
Zinc, scrap	20.00

Chicago

JUNE 7.—The entire non-ferrous metal market is this week on a higher level. There is no lessening of the upward flight in spelter values and but little assurance of securing metal at any quotation that might be named. A very rapid advance in lead also appears to be under way. We quote as follows: Casting copper, 18.75c. to 19c.; Lake copper, 19.50c. for prompt shipment; small lots, ⅛c. to ¼c. higher; pig tin, carloads, 39.75c.; small lots, 41.75c.; lead, 5.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, nominally 36c.; sheet zinc, 32c., or price ruling date of shipment; Cookson's antimony, none obtainable; other grades, 36c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 14.75c.; copper bottoms, 13.75c.; copper clips, 14.25c.; red brass, 12c.; yellow brass, 10.50c.; lead pipe, 4c.; zinc, 12c.; pewter, No. 1, 23c.; tinfoil, 30c.; block tin pipe, 34c.

St. Louis

JUNE 7.—The extremely excited condition in the non-ferrous metal market continues. In the St. Louis market today lead was quoted at 6c.; spelter, 30c.; tin, 42c.; Lake copper, 20c.; electrolytic copper, 19.50c.; antimony, 40c. The ore market at Joplin has seen some thrilling times the past week, zinc blende selling on a basis of 60 per cent. metal at $110 per ton, with the top settlement for the choicest as high as $113. This was $25 over the previous week's highest figures and by far the highest price paid in the history of the industry. Calamine brought $76, basis of 40 per cent., with the premium grades reaching $82. Lead ore advanced $7 per ton to $58, basis of 80 per cent. Miscellaneous scrap metals are quoted as follows: Light brass, 10.25c. to 10.50c.; heavy yellow brass, 12c. to 12.50c.; heavy red brass and light copper, 12.75c. to 13c.; heavy copper and copper wire, 15.75c. to 16.25c.; pewter, 25c.; tinfoil, 35c.; lead, 5c.; zinc, 18c.; tea lead, 3.50c.

Iron and Industrial Stocks

NEW YORK, June 9, 1915.

Prices of securities were decidedly strengthened by the announcement last Thursday of the defeat of the Government's attempt to dissolve the United States Steel Corporation. This not only caused United States Steel stocks to advance but sympathetically affected other industrial stocks. The so-called war stocks had a separate upward movement of their own in the opening days of the current week. The advance was especially marked in Bethlehem Steel stocks. The range of prices on active iron and industrial stocks from Wednesday last week to Tuesday this week was as follows:

Allis-Chal., com.	15½ - 19¼	Lackawanna Stl.	44 - 48
Allis-Chal., pref.	47 - 54	Nat. En. & Stm., com.	15⅜ - 16¾
Am. Can, com...	36⅜ - 42½	Pressed St'l, com.	45¾ - 49
Am. Can, pref...	98 - 101	Pressed Stl., pref.	99
Am. Car & Fdy., com.	51¾ - 55½	Ry. Steel Spring, com.	30 - 33½
Am. Car & Fdy., pref.	113	Republic, com...	28 - 30¾
Am. Loco., com..	46 - 50½	Republic, pref...	83 - 86½
Am. Steel Fdries.	33 - 34	Rumely Co., com.	3¾ - 4½
Bald. Loco., com.	48½ - 54⅞	Rumely Co., pref.	10¼ - 13
Bald. Loco., pref.	103½ - 104½	Sloss, com.	33 - 36
Beth. Steel, com.	144 - 165	Pipe, com.	14½ - 15
Beth. Steel, pref.	113 - 114	U. S. Steel, com.	54⅝ - 64
Case (J. I.), pref.	74½	U. S. Steel, pref.	106⅝ - 112
Colorado Fuel...	30 - 32½	Va. I. C. & Coke	37
Deere & Co., pref.	90	West'gh'se Elec..	94¼ - 99
General Elec....	157 - 168½	Am. Ship, com...	30 - 30¼
Gt. No. Ore Cert.	32 - 35½	Chic. Pneu. Tool.	55⅞ - 60
Int. Harv. of N. J., com.	95 - 114	Cambria Steel...	47½ - 48½
Int. Harv. Corp., com.	62½	Lake Sup. Corp..	7½ - 9¼
Int. Harv. Corp., pref.	97	Warwick	9½
		Cruc. Steel, com.	28½ - 32¼
		Cruc. Steel, pref.	87 - 90
		La Belle Iron, pref.	103

Dividends

The Ingersoll-Rand Company, regular semi-annual, 3 per cent. on the preferred stock, payable July 1.

The General Fireproofing Company, regular quarterly, 1¾ per cent. on the common stock and 1¾ per cent. on the preferred stock, both payable July 1.

The American Car & Foundry Company, regular quarterly, 1¾ per cent. on the preferred stock and ½ of 1 per cent. on the common stock, both payable July 1.

The American Can Company, regular quarterly, 1¾ per cent. on the preferred stock, payable July 1.

The Bethlehem Steel Company, regular quarterly, 1¾ per cent. on the preferred stock, payable July 1.

The Continental Can Company, regular quarterly, 1¾ per cent. on the preferred stock, payable July 1.

The American Brake Shoe & Foundry Company, regular quarterly, 2 per cent. on the preferred and 1¾ per cent. on the common stock, both payable June 30.

The Western Electric Company, regular quarterly, $2, payable June 30.

The Standard Coupler Company, regular semi-annual, 4 per cent. on the preferred stock, payable June 30. No action has been taken on the common dividend.

United States Steel Corporation Wins Suit

(*Continued from page* 1301)

that should be followed by a decree of dissolution, and we are also of opinion that sufficient reasons have not been afforded to justify us in now awarding an injunction. But as already stated if the Government so desires, the court will retain jurisdiction of the cause for the purpose above outlined.

Judge Woolley's Separate Statement

In the separate opinion by Judge Woolley, in which Judge Hunt concurs, there is a less complacent view of what was done by the promoters of the Steel Corporation. The "integrating" operation dwelt upon at such length by Judge Buffington is given little consideration, but actual intent to monopolize is found. Judge Woolley agrees with all that is said in the main opinion about the absence of control over raw materials and the inability of the Steel Corporation to exercise a monopoly in iron ore. He would therefore dismiss the bill against the defendant Rockefeller.

CORPORATION PROMOTERS INTENDED MONOPOLY

While Judge Woolley holds that in its inherent nature the Steel Corporation is not a monopoly and that the direct and necessary effect of the organization was not unduly to restrain trade, he does not accept the integration theory as the reason for forming the corporation. He says:

The testimony which impresses me most is that which relates to and concerns the things said and done preliminary to and connected with the organization of these various combinations at the time of their creation. These circumstances indicate that the various combinations were made upon a scale that was huge and in a manner that was wild. Properties were assembled and combined with less regard to their importance as integral parts of an integrated whole, than to the advantages expected from the elimination of the competition which theretofore existed between them. * * *

The immediate as well as the normal effect of such combinations was in all instances a complete elimination of competition between the concerns absorbed, and a corresponding restraint of trade. That for a time during that period, monopoly was created and trade unduly restrained in certain steel products by the combination which almost exclusively produced them, is seriously charged and not satisfactorily denied. Such was the common knowledge of those conversant with the steel industry, and as many of the men who participated in the organization of such combinations participated actively in the organization of the Steel Corporation, it is difficult to believe that they did not know that to some extent, and probably to what extent, such combinations restricted and suppressed competition, and that they did not expect, by force of the multiplied absorption of trade and by the power resulting from the increased elimination of competition, the Steel Corporation would be enabled to fix and regulate the production and prices of all commodities in the industry.

INDEPENDENTS AS CULPABLE AS THE STEEL CORPORATION

Judge Woolley combats the corporation's plea that in combining with others in reference to prices it was "steadying the market and preventing rapid and extreme fluctuations." He suggests that "if the establishment of uniform prices for the products of an industry should ever be found advantageous or necessary, such an economic policy should be inaugurated and pursued under authority of law and not by the will of the industry itself." In the pools which existed up to 1904, later the trade meetings which various steel companies attended, and finally in the Gary dinners "the offense of the corporation was not its dominancy over the trade, but was an offense precisely similar to that of which every independent and co-operating producer was guilty and consisted in the act of combining with its competitors to produce an unlawful result."

In conclusion Judge Woolley says:

THE CORPORATION DID BETTER THAN ITS ORGANIZERS

My conclusions of fact and of law are, that the *organizers* of the corporation (1) intended to create a monopoly and to restrain trade, and (2) combined with others and attempted to monopolize trade within the meaning of the act; and that the *corporation* (1) neither attempted nor possessed the power alone to do the unlawful things intended by its formation, but (2) that it unlawfully combined with others to restrain trade by controlling prices.

Whatever remedy there may be against the organizers of the corporation for acts violative of the statute, certainly in this proceeding in equity a decree of dissolution cannot be awarded against the corporation, for the unlawful intent and the unsuccessful attempt of its organizers to violate the law. Upon the finding that the corporation, in and of itself, is not now and has never been a monopoly or a combination in restraint of trade, a decree of dissolution should not be entered against it. Having found, however, that the corporation violated one of the provisions of the statute by combining with others to unduly restrain trade, and that it possesses the power to again unlawfully combine with others, to do the same unlawful acts, and though not actively threatening, yet because of the disposition displayed throughout the larger portion of its history, it may again do so, I am of opinion that the corporation should be prevented doing the things and repeating the practices respecting the fixing and maintaining of prices herein viewed illegal. The ordinary relief, obviously, is the injunction process of the court which, in an ordinary situation, would follow such a finding as of course. I am satisfied, however, that the same end will be attained, in a manner consistent with recent legislation, by retaining jurisdiction of the bill, if desired by the Government, for the purpose of restraining the defendants against engaging in the price-fixing practices found illegal.

Philadelphia Foundrymen's Association

The Philadelphia Foundrymen's Association held its regular monthly meeting at the Manufacturers' Club, in that city, on the evening of June 2, the Associated Foundry Foremen of Philadelphia and vicinity meeting jointly with the foundrymen. Russell R. Clarke, superintendent of the brass shops of the Pennsylvania lines, Allegheny, Pa., spoke informally on "Foundry Equations." He designated foundry success as being the sum of information, inspiration, determination and perspiration. He pronounced foundry efficiency more than mere organization, rather the ideal of service above personal interest. Every foundryman should broaden himself; education is needed and no opportunity should be neglected to obtain live information and to benefit thereby. The balancing of forces and conditions in foundry operation is a paramount and inevitable necessity if success is to be obtained.

Edward B. Martin, of the United Business Men's Association, of Philadelphia, made an address on municipal affairs, and the association's work in connection therewith, with a view of enlisting membership in the organization he represented. Adjournment was taken until September.

A contract aggregating $70,000 for motor castings to be delivered at the Detroit plant of the Continental Motor Mfg. Company has been received by the Lakey Foundry & Machine Company, Muskegon, Mich. The castings will be used in the manufacture of the 1916 Viele six-cylinder engine, the order for which was recently placed with the Continental Company. It is estimated that about 675 tons of metal will be used to fill this order.

PERSONAL

W. E. Hartman, Webster Building, Chicago, has been retained as consulting engineer by the Youngstown Sheet & Tube Company on its by-product coke oven construction of 204 ovens at Youngstown, Ohio. This is in addition to his work as consulting engineer for the Lehigh Coke Company on its coke oven construction of 424 ovens.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has appointed William B. Blowers district sales agent for the New York and Philadelphia districts to succeed Charles E. McInnes, who has resigned to engage in other business.

C. L. Miller, vice-president and general superintendent of the American Steel & Iron Company, Pittsburgh, announces the following appointments, effective June 1: B. D. Pheneger, superintendent of the Donora blast furnaces, has been made superintendent of the Central furnaces at Cleveland, Ohio, succeeding Chester A. Orr, who resigned to become manager of the Cleveland Metal Products Company, an interest of the Cleveland Foundry Company; Charles J. Brown, formerly superintendent of the Shoenberger furnaces in Pittsburgh, has been transferred to Donora, and John C. Hopkins, superintendent of the Emma furnace at Cleveland, has been made superintendent of the Shoenberger furnaces.

The Lumen Bearing Company, Buffalo, N. Y., announces the appointment of Louie S. Jones as sales manager. Prosper J. Hoeffler is now with this company, in charge of sales of babbitts and solders.

Effective June 1, T. A. Burt was made treasurer and auditor of the LaBelle Iron Works, Steubenville, Ohio; W. E. Beswick, secretary; H. P. Beswick, assistant treasurer, and T. M. Robinson, assistant auditor.

R. E. Leightner, for six years connected with the Virginia Bridge & Iron Company, Roanoke, Va., has been appointed general manager of the Roanoke Iron Works.

The Hoskins Mfg. Company, electric furnaces, pyrometers and heating appliances, Detroit, Mich., announces the appointment of W. C. Tharp as district manager in charge of its Pittsburgh office, to succeed I. J. Shults, resigned. Mr. Tharp has been associated with the Republic Iron & Steel Company, the Scientific Materials Company and the Metallurgical Testing Laboratory of Pittsburgh.

S. E. Eldridge, formerly with the gas-cleaning department of the Carnegie Steel Company, at its Duquesne works, Duquesne, Pa., has accepted a position with the Columbus Iron & Steel Company, Columbus, Ohio.

At the regular meeting of the Washington District of the United Metal Trades Association, held in Seattle, Wash., the following officers were elected: Chairman, J. C. Beigert, Beigert Machine Works, Seattle; vice-chairman, John Hartman, Atlas Foundry & Machinery Company, Tacoma; treasurer, Fred C. Furth, Vulcan Mfg. Company, Seattle.

A. Prausnitz, associate manager for the Orenstein-Arthur Koppel Company on the Pacific coast, is making a tour of the Hawaiian Islands.

J. A. Camm, of the Kearney & Trecker Company, Milwaukee, Wis., was in New York City last week, closing contracts for a large number of milling machines for foreign shipment.

F. W. McIntyre, who for the past four years has been connected with the Chicago office of the Niles-Bement-Pond Company, has been transferred to the company's Boston office, where he formerly was located.

Important changes are taking place in the prominent San Francisco machinery house of Harron, Rickard & McCone. H. L. Terwilliger has resigned the presidency to take the management of the San Francisco office of the Ingersoll-Rand Company, but will make his headquarters in the Harron, Rickard & McCone building, and that house will continue to carry a stock of Ingersoll-Rand machinery. H. G. Mitchell, formerly secretary, is now president of Harron, Rickard & McCone, whose building is being extensively altered, with the installation of improved facilities for displaying machinery.

J. G. Phelps has severed his connection with the Faultless Iron Works, St. Charles, Ill., as superintendent.

J. H. Regan, assistant secretary and treasurer of the Pressed Steel Car Company, has left the United States for a more or less extended journey which will include Petrograd, Russia.

J. E. MacArthur, formerly connected with the Pierce-Arrow Motor Car Company and more recently superintendent of the Keystone Mfg. Company, Buffalo, resigned May 1 to become general superintendent of the Robinson Fire Apparatus Mfg. Company, St. Louis.

Charles Votion, formerly of Antwerp and now of London, is in the United States in connection with iron and steel purchases for Gillieaux & Collinet, dealers, of London, Paris and Charleroi.

Herbert M. Wilson, engineer in charge of the Pittsburgh Experiment Station of the United States Bureau of Mines, has resigned to become the director of a newly formed organization to be known as the Coal Mine Insurance Association. This is a combination of 10 American and British insurance companies for the joint underwriting of coal-mine accident insurance.

E. R. Fish, secretary of the Heine Safety Boiler Company, is to read a paper on boiler failures before a meeting of the American Society of Mechanical Engineers at St. Louis, Mo., June 16.

Ira C. Rogers, assistant purchasing agent for the Pittsburgh & Lake Erie Railroad, has resigned to become general purchasing agent for the International Steam Pump Company, 115 Broadway, New York, effective June 1.

Charles E. Carpenter, general manager of sales of the Allied Machinery Company of America, New York, has returned from Europe. His company, he announces, has taken new office and demonstration quarters at 19 Rue Rocroy, Paris, France. The offices of the company will be over the showroom. The situation of the new offices is central and served by good railroad facilities.

Charles A. Schieren, Charles A. Schieren Company, New York, was elected president of the Machinery Club of the City of New York at a meeting of the board of governors held June 1. John A. Hill, Hill Publishing Company, was elected vice-president; E. H. Benners, Crown Castings Company, treasurer, and Frederic Stadelman, Wellman-Seaver-Morgan Company, secretary.

Horace R. Wentzell has severed his connection as superintendent of the Bourke Machine Company, Detroit, Mich., and has become affiliated in a similar capacity with the Houk Mfg. Company, Buffalo, N. Y.

Germany's April Output of Pig Iron

Germany's production of pig iron in April, according to official data in Stahl und Eisen, was 938,679 metric tons, compared with 1,534,429 tons in April, 1914, and 938,438 tons in March, this year. The April output was made up as follows: Foundry pig iron, 210,488 tons (266,787 tons in April, 1914); Bessemer iron, 14,426 tons (35,383 tons); basic iron, 564,381 tons (1,004,306 tons); steel-making iron and spiegeleisen, 125,023 tons (194,238 tons), and puddle iron, 24,361 tons (33,715 tons).

The Cleveland Manufacturers' Club, Cleveland, Ohio, at its annual meeting June 3, elected the following officers: President, E. S. Griffiths, Cleveland Machine & Mfg. Company; vice-president, C. F. Kurz, Cleveland Store Fixture Company; secretary, C. K. Dissette, Ajax Mfg. Company; treasurer, W. F. Swift, City Foundry Company.

The National Association of Waste Material Dealers will hold its next regular meeting at the Hotel Astor, New York, June 15, at 2 p. m. The Metal Division will meet on the preceding day, June 14, at 2 p. m.

Pittsburgh and Nearby Districts

S. Diescher & Sons, consulting engineers, Farmer's Bank Building, Pittsburgh, are sending out inquiries for building construction and equipment for the new 20 hot-tin mills to be built by the McKeesport Tin Plate Company, McKeesport, Pa. The buildings are a boiler house extension, 45 x 100 ft., steel and brick; mill extension, 175 x 775 ft., steel; tin-house extension, 66 x 300 ft., steel and brick; warehouse extension, 50 x 900 ft., steel and brick; new sheet-bar house, 65 x 600 ft., steel; new furnace building, 43 x 1400 ft., steel. These six buildings will take about 2500 tons of steel. The equipment comprises 20 new hot mills, 28 in. diameter; 14 26-in. cold mills; 20 38-in. doubling shears, motor driven; 20 42-in. belt-driven squaring shears; two 72-in. bar shears, with table and bar piler; five hot-mill engines, 32 x 60 in., with rope wheels and jack shafts, also electric cranes consisting of two 15-ton, 65-ft. span; two 15-ton, 36 ft. span; one 20-ton, 57 ft. span; one 15-ton, 37 ft. span; one 15-ton, 72 ft. span; two 5-ton, 48 ft. span. Inquiries will shortly be sent out for the rest of the equipment required. Active construction work will be started as soon as possible.

Keyser, W. Va., will issue bonds for the construction of a water system.

The Central Tube Company, Pittsburgh, works at Economy, Pa., has filed notice of an increase in its authorized capital from $500,000 to $1,000,000. Alex Laughlin, president, states that the company does not contemplate any additions to its plant for the present.

The stockholders of the Ohio Steel Company, Youngstown, will meet July 6, for the purpose of dissolving the corporation. The company was taken over some years ago by the Carnegie Steel Company, and its plant is now known as the Ohio works of the latter.

Isaac W. Frank, president United Engineering & Foundry Company, Pittsburgh, states that his company has steadfastly refused to make any war materials, though strongly importuned to do so.

The first conference between wage committees of the Amalgamated Association of Iron, Steel and Tin Workers and the sheet and tin-plate mills that sign the Amalgamated scale will be held in Atlantic City, N. J., June 16. It is not believed there will be any trouble this year in coming to a settlement. The week after a conference will be held at the same place between committees of the Amalgamated Association and the Western Bar Iron Association on the bar-iron scale. All the present Amalgamated scales expire on June 30, and it is expected that new scales will be agreed upon before that date.

Last week officials and operating managers of the American Sheet & Tin Plate Company to the number of 20 or more made an inspection trip of its various plants. It is stated that all were found in very high physical condition. No important additions or improvements are under way. The report that a large addition to the hot mill capacity of the Chester works is to be made is incorrect.

In the month of May the New Castle open-hearth steel plant of the Carnegie Steel Company turned out slightly over 70,000 tons of ingots. The largest previous record for one month at these works was 68,000 tons.

The Erie Stove Company, Erie, Pa., is placing contracts for quite a large addition. The Pittsburgh Bridge & Iron Company will furnish 200 tons of steel for new buildings.

The Lewis Foundry & Machine Company, Pittsburgh, has received an order for 4 complete strip mills, with rolls 21x36 in. to be equipped with Falk drives, and also one 156-in. squaring shear, to be installed in the works of the Aluminum Company of America, New Kensington, Pa.

The Republic Iron & Steel Company, Youngstown, Ohio, is building a third continuous Laughlin heating stove for its 90-in. plate mill, which will increase the capacity of the mill about one-third. The benzol plant is about finished and will likely be started next week. The 10 open-hearth furnaces and the Bessemer steel plant are operating to practically 100 per cent. The company has been shipping open-hearth billets abroad heavily for several months.

The report that the Sharon works of the Carnegie Steel Company, embracing an open-hearth steel plant and plate mills, would be started at an early date is premature. This plant, which has been idle for several years, has been put in shape for operation, but no definite date has been set for starting it.

The Columbia Steel & Shafting Company, Pittsburgh, has moved its Chicago office from room 1243 to room 1334 Peoples Gas Building. Joseph J. Conlisk is now in charge of that office, succeeding L. S. McClernan, resigned. Mr. Conlisk was formerly connected with the Pittsburgh Shafting Company of Detroit, an identified interest of the Columbia Steel & Shafting Company.

The J. E. Moss Iron Works, Inc., Wheeling, W. Va., structural steel fabricator and builder of ornamental iron work and fireproofing materials, has recently completed an entirely new ornamental shop, also a large addition to its structural shop and yards, increasing its capacity considerably.

The Reznor Stove Company, Mercer, Pa., has decided to double the capacity of its plant for the manufacture of gas-heating stoves, and will be in the market for a good deal of equipment. It has placed an order with the Pittsburgh-DesMoines Bridge Company for 400 tons of steel for new buildings.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has made its own plans for a coke-handling plant and coke docks for its new by-product coke plant. It will soon ask bids, and will superintend the work with its own engineers.

The Washington Coal & Coke Company, First National Bank Building, Pittsburgh, has taken an order for 1000 tons of coal per day for an entire month for shipment to Italy and the order may extend over two months for the same amount.

Decreased Harvester Earnings

The International Harvester Company has in past years made the development of its foreign business conspicuous. To a corresponding degree its operations have been affected by the European war and its earnings curtailed. The income account of the company for the calendar year 1914 compares as follows with the previous year:

	1914	1913
Income from operation	$12,206,277	$13,284,671
Interest on loans	1,609,444	1,828,745
Reserve for ore and timber extinguishment	214,673	321,595
Reserve for plant depreciation	1,156,542	1,290,087
Reserve for special maintenance	484,335	561,718
Reserve losses on receivables, etc.	878,000	921,000
Insurance and pension funds	400,000	400,000
Net profits	$7,463,231	$7,915,526

The income account of the International Harvester Corporation compares as follows:

	1914	1913
Income from operations	$7,329,825	$10,356,628
Interest on loans	1,224,041	1,164,432
Reserve for plant depreciation	725,646	645,107
Reserve for special maintenance	164,400	179,400
Reserve losses on receivables, etc.	953,143	1,112,347
Insurance and pension funds	.....	100,000
Net profits	$4,262,594	$7,155,253

President Cyrus H. McCormick says: "Early in 1914 the outlook for foreign business was promising. The outbreak of the European war, together with partial crop failures in Western Canada and unsettled financial conditions in South America, materially affected the outcome and the receipts in foreign countries declined 12 per cent. from the previous year. The works at Croix, in France, have not been in operation since August, but no report of any damage to this property has been received. The works at Neuse, Germany, and Lubertzy, Russia, have been operating with reduced forces. The works at Norrkoping, Sweden, have been running at full capacity."

Machinery Markets and News of the Works

EXPORT DEMAND LIGHTER

New Interests in War Business Field

Shortage in Skilled Mechanics Acute in New England—Great Britain Looking for Men in Canada

The demand for machine tools for export is lighter, but that from domestic sources having war business is unchanged except for slight variations. In New England the dearth of skilled machinists is a serious matter. In Canada representatives of Great Britain are seeking skilled men who are willing to go to England. Canada itself has not too many skilled mechanics and lately has obtained some from the United States. In New England, not only machine tool builders, but the makers of textile machinery are short of men. In New York the war business is unabated and new interests are coming into the field. Buying has been steady in Detroit. Milwaukee shows improvement. In Cleveland the demand for lathes continues heavy, but the European and Canadian demand for turret lathes is lighter; some round lots of tools have been sold to automobile manufacturers and there is a scarcity of small power presses because of their makers having concentrated on the larger sizes for shell work. Cincinnati, also, reports a noticeable let-up in the foreign demand and this is causing the builders to proceed more cautiously, but contracting shops and the foundries are all busy. Machinery manufacturers in the Central South are working but five days a week. In the Birmingham district a little betterment in demand is reported and a dealer there has profited from war business. Only slight improvement in the machinery business is reported in St. Louis, but the prospects are for more activity. Conditions are slightly better in the Pacific Northwest. In San Francisco the stringency in lathes is being felt and in that city there is an excellent demand for woodworking machinery and special equipment.

New York

NEW YORK, June 9, 1915.

The demand is maintained, especially that which comes from those companies which have war contracts or are contemplating going into that phase of business. The International Steam Pump Company has issued a general inquiry for prices and deliveries on machinery used in shell making. The General Electric Company continues to buy, though it is using its regular equipment to a large extent in turning out high-explosive shells. Most of the smaller orders which are being placed are directly or indirectly due to war business and the number of firms which are striving to increase the activity of their shops with manufacturing for export to the belligerent nations continues to grow.

The export business continues to be excellent, the only complaint being that shipping agents are sometimes slow in removing crated machines because of their inability to get ocean freight space as quickly as they wish. Large shipments are being made to England, as well as to France. The effect of Italy's entrance into the war is still an unknown factor. In the opinion of the trade Italy was well-prepared for war, and if this is true it may retard demand from that country for a time. However well prepared she may be, however, a prolonged war would necessitate going outside of her borders for supplies and for additional machinery.

The domestic demand for purely industrial purposes is irregular, and the railroads are doing very little buying. There is inquiry out for approximately $90,000 worth of cranes of various kinds and some of the business should be placed very soon.

It is generally understood that a contract has been closed between the Baldwin Locomotive Works and the Remington Arms Company whereby a large plant on the grounds of the locomotive works at Eddystone, Pa., will be devoted to the manufacture of rifles. The new plant of the arms company at Bridgeport, Conn., recently completed, was equipped with machinery by Manning, Maxwell & Moore, Inc., New York, and it is reported that this company will place orders duplicating the machine tools for the Eddystone plant.

The Lehigh Valley Railroad has let contract to Westinghouse, Church, Kerr & Co., 37 Wall street, New York, for a 50-stall roundhouse to be built at Sayre, Pa., at an estimated cost of $400,000.

The Snead & Co. Iron Works, Inc., Jersey City, N. J., manufacturer of architectural and ornamental iron, etc., is building a two-story reinforced concrete pattern shop. Contracts for most of the materials have been placed.

The Central Dyestuff & Chemical Company, Plum Point Lane, Newark, N. J., is erecting two additions to its plant and will construct a one-story powerhouse, 54 x 67 ft.

The Mashek Engineering Company, 90 West street, New York, manufacturer of mining and briquetting machinery, recently shipped briquetting equipment of 20 tons an hour capacity to the Delparen Anthracite Briquet Company, Parrott, Va.; the Stott Briquet Company, Superior, Wis.; and will make similar shipments to the Gamble Fuel Briquet Company, Harrisburg, Pa., and the New Jersey Coal Mfg. Company, Camden, N. J.

Convent Station, N. J., has recently received bids through its engineer, Clyde Potts, 30 Church street, New York City, for the construction of a sewer system estimated to cost $20,000.

The General Electric Company, Schenectady, N. Y., reports that the addition to its shop will be 40 x 352 ft., instead of 60 x 320 ft., and the estimated cost will be about $16,000, not $160,000, as has been reported.

The Cadwell-Vernon Company, Jamestown, N. Y., has been incorporated with a capital stock of $100,000 by John Cadwell, and others. It is equipped to manufacture wood and metal specialties, such as frames and moldings. John Cadwell is president; Frank S. Vernon, vice-president; E. B. Cadwell, secretary and treasurer, and Dixon S. Vernon, manager.

The Utica Heater Company, Utica, N. Y., has purchased the foundry of the Munson Brothers Company in Whitesboro, to care for its increased business.

Plans are being prepared by the Fibre Pail Corporation, Lockport, N. Y., for the rebuilding of its plant recently destroyed by fire, and also for a paper mill in addition.

A powerhouse is to be added to the plant of the Vacuum Oil Works, Exchange street, Rochester.

Plans have been completed for addition to the factory of the Foote Mfg. Company, Nunda, N. Y., manufacturer of concrete mixing machinery.

The Hamilton Corliss Engine Works was low bidder at $26,000 for the construction of a high-pressure pumping engine of 10,000,000 gal. a day capacity for the Binghamton, N. Y., waterworks.

The Shongo Construction Company, Rochester, N. Y., which has been incorporated with a capital stock of $50,000, will do a general contracting business in building lines, and will operate shops in that connection.

The American Fork & Hoe Company, Binghamton, N. Y., will rebuild its factory which was destroyed by fire some months ago.

The Security Vehicle Lock & Brake Company, 330 East Thirty-second street, New York, has been incorporated to

manufacture a device for preventing the moving of vehicles. M. Turitz is vice-president and manager.

James A. Bannister, 185 Washington street, Newark, N. J., has had plans drawn for a four-story reinforced concrete factory, 95 x 175 ft., to be erected at 370-386 Orange street, at a cost of about $125,000.

Baltimore

BALTIMORE, MD., June 7, 1915.

Several Baltimore manufacturers have succeeded in getting large war contracts during the last few days, and this has resulted in greater efforts being made by local firms to secure this kind of business.

A contract for about 2,000,000 lb. of projectile bands, totaling nearly $800,000, has been received by the Baltimore Tube Company, Ostend and Wicomico streets, Baltimore. It is believed the company will receive more similar orders.

The Baltimore Malleable Iron & Steel Casting Company, Charles and Wells streets, Baltimore, has received a contract providing for the delivery of the iron and steel for 365 motor trucks for England and the steel for the same number of trailers for the trucks. It is said the parts are to be assembled at the plant of a Philadelphia manufacturer. Officials will not say what the contract amounts to. The same company recently filled an order for 10,000 pairs of stirrups for England.

To care for the sulphuric acid order from the Du Pont de Nemours Powder Company, amounting to about $1,000,000, the Davison Chemical Company, Hawkins Point, Md., will make improvements to cost between $100,000 and $150,000.

The Alexander Milburn Company, 1420 West Baltimore street, Baltimore, Md., manufacturer of acetylene gas apparatus, has acquired the business of the Wells Light Mfg. Company, Jersey City, N. J.

The Poole Engineering & Machine Company, Woodberry, Md., which received a large shrapnel case contract, is preparing to take on 400 extra men July 1 and run the plant 24 hours a day.

The crusher plant of the Calvert Quarries Company, Gwynn's Falls Park, Md., with all its equipment, has been destroyed by fire. John G. Schwind is president.

The C. J. Youse Company, Inc., 23-25 South Gay street, Baltimore, box manufacturer, will construct a factory at Holliday and Saratoga streets.

A. Trust Poehlmann, president of the Poehlmann Automobile Company, Baltimore, has announced that the company will take over a building at Chase and Cathedral streets, Baltimore. Machinery of the latest type will be installed for a repair department.

Mottu & White, architects, 322 North Charles street, Baltimore, are preparing plans for a powerhouse to be constructed at the Donaldson School, Ilchester, Md., by the W. E. Harn Company, builder, 213 North Calvert street, Baltimore.

The Baltimore Enameling & Novelty Company, Woodall street, Baltimore, has taken title to two lots in South Baltimore. Plans have not been stated as yet.

Specifications for the new centrifugal pump for the Eastern Pumping Station, Baltimore, have been submitted to the Board of Awards by Robert L. Clemmitt, acting water engineer. It is to have a capacity of 20,000,000 gal. and will cost about $25,000.

The Baltimore County commissioners, Towson, Md., plan a sewage disposal plant for Arlington and West Arlington.

Crook, Kries & Co., 28 Light street, Baltimore, have secured a contract for boilers, engines, electrical apparatus and general powerhouse equipment at the Hebrew Hospital, Monument street and Rutland avenue.

An automobile repair shop will be constructed at a cost of $3000 for Robert W. Smith, Second and French streets, Wilmington, Del., by the A. S. Reed & Brothers Company.

The Carbo-Hydrogen Company, Dover, Del., has been incorporated with a capital stock of $3,500,000, to manufacture carbo-hydrogen and similar products and blowpipes for cutting and welding purposes. The incorporators are J. R. Rose, Pittsburgh, Pa.; Herbert E. Latter and Norman P. Coffin, Wilmington, Del., and Clement M. Egner, Elkton, Md.

A factory for refining clay is being built at Stanton, Del., by the Whitman Clay Products Company, Philadelphia. It is expected to be completed about July 15.

A factory, 63 x 54 ft., is being constructed on Garashe lane, Wilmington, Del., by the Manufacturers' Contracting Company, for the Standard Arms Company, at a cost of about $7000. It will be used for the manufacture of munitions of war.

Philadelphia

PHILADELPHIA, PA., June 7, 1915.

Contract has been awarded to Klaus & Reinke, 3414 Melvale street, Philadelphia, for the construction of a two-story brick and stone pattern shop, 15 x 45 ft., to be erected for the Schneider-Bowman Company at a cost of about $2000.

Mitchell Brothers, 2125 Race street, Philadelphia, have been granted a permit for the erection of a one-story brick and stone addition to the powerhouse of The W. S. Woodland Company at 132 North Twenty-third street, Philadelphia. It will be 12 x 30 ft., and cost about $400.

The N. C. Cressman Company, Drexel Building, Philadelphia, is in the market for a good second-hand No. 4 craw press.

The Standard Construction Company, Drexel Building, Philadelphia, has been awarded the contract for the construction of a four-story brick and steel factory; owner not specified.

The Reading Steel Casting Company, Reading, Pa., has taken out a permit for the erection of a one-story foundry, 40 x 62 ft., at Lafayette and Tulpehocken streets at a cost of about $4000. George A. Koch is the contractor.

The Coopersburg Casket Company, Coopersburg, Pa., has been incorporated to continue the present business under the same name. The capital stock is $30,000.

The Waynesboro Foundry & Machine Company, Waynesboro, Pa., which has purchased the former Waynesboro Foundry & Metal Company plant, will be incorporated by John W. Warehime, A. R. Warner and C. J. Huff. It will manufacture a full line of castings. J. E. Frantz is president; L. D. Gilbert, treasurer, and C. J. Huff, secretary.

The William Cramp & Sons Ship & Engine Building Company, Philadelphia, has awarded contract through the Hoffman Engineering & Contracting Company for the construction of a pattern storage building to replace one recently destroyed by fire. H. W. Scott is plant engineer.

The Fuel Economy Engineering Company, Chester, Pa., John J. Buckley, 314 Pennell street, Chester, Pa., vice-president and general manager, has been incorporated with a capital stock of $50,000. M. L. White is president and treasurer, and J. F. McIndoe, Philadelphia, is secretary.

John J. Ryan and John J. Buckley, Chester, Pa., have purchased the plant formerly used for the manufacture of nails and wire by the Duplex Metal Company, foot of Lloyd street, Chester. It is stated they expect to dispose of the property to a manufacturing company, the name of which is withheld.

The Culpeper Machine Company, Culpeper, Va., has been incorporated with $10,000 capital stock by J. M. Millman and William F. Downing.

The Virginia Machinery & Well Company, Richmond, Va., has been organized with $50,000 capital stock by C. F. Cole, C. R. Elam, and Quincy Cole.

New England

BOSTON, MASS., June 8, 1915.

The machine shops are running to capacity, producing machine tools, and their parts, under sub-contract. The latter class of works are in some cases rather straining their energies, for their equipment is not always up to the precision requirements. Yet they are doing very well, and some of them are learning the lesson that it pays to have the best of machinery, of the class which cannot today be bought in the market.

In the New England territory the textile industry plays a very important part. Improvement is noted in the cotton end, and the woolens are probably more active as a whole, everything considered. At any rate the textile machinery people are busier; and, in common with other owners of machine shops, are troubled about their supply of labor. Not only are skilled mechanics scarce, but the kind of men who can be broken in on specialized machine jobs are not easy to find in any considerable number. The labor problem is becoming the big element of industry.

In Providence, R. I., and its neighboring town of Attleboro, Mass., is a territory credited with being the center of the jewelry industry of the United States. This business has not responded to any great extent to the general revival of manufacturing, but still the tendency is upward. The jewelry manufacturers are large buyers of certain classes of machinery, mostly presses. The firms which furnish them with equipment are, almost without exception, very busy filling orders having directly or indirectly to do with the manufacture of war materials.

The United States Cartridge Company, Lowell, Mass., which has large orders for munitions of war, and which has added in a large way to its plant, will occupy an additional building to be erected by the Wamesit Power Company. It will be 50 x 350 ft., two stories.

The Taunton-New Bedford Copper Company, New Bedford and Taunton, Mass., has secured a building permit for a large addition to its Taunton plant, and the work of construction has already begun.

The Aurora Electrical Company has been organized in Lynn, Mass., to manufacture spark plugs and other electrical specialties. It is proposed to build a factory on Western avenue. P. J. Campbell is president.

The Howe Scale Company, Rutland, Vt., has started work on its new foundry, to be three stories, 40 x 200 ft. It will be devoted to the cleaning department.

It is reported that the Bosch Magneto Company, Springfield, Mass., is planning large additions to its already great factory. The war has tended to concentrate the company's American business in Springfield, shutting off imports of the German product.

The Merrimack Foundry & Machine Company, Lawrence, Mass., plans to create a new plant on land recently purchased, which will permit of a railroad siding and increased capacity.

Salem, Mass., will receive bids until June 21 for two 10,000,000-gal. steam pumps. C. F. Ashton is city engineer.

The New York Propeller Company has prepared plans for an addition to its shops in Norwich, Conn.

Palmer Brothers, Noank, Conn., has leased its plant to Pendleton Brothers, New York. The works will be used, as formerly, for the repair of small sail or power craft.

From Derby Line, Vt., comes the statement that the Union Twist Drill Company, Athol, Mass., plans to go ahead with the erection of new buildings for its Vermont plant.

M. F. Cahill, South Boston, will erect a building for light manufacturing, 80 x 150 ft., one story, of fireproof construction.

Chicago

CHICAGO, ILL., June 7, 1915.

The complexion of activity in machinery circles is still colored almost entirely by the foreign demand. An interesting feature has been the marked increase in the number of inquiries from New England and the East generally, apparently representing a combing of all the markets for every available tool for meeting prompt delivery requirements. Domestic business presents few inquiries of importance and with the exception of some isolated tools railroad buying gives no signs of reawakening. The large Burlington and Santa Fe lists are still pending.

The Art Metal Products Company, 514 South Green street, Chicago, has increased its capital stock from $20,000 to $50,000.

The Duncan Foundry & Machine Works, Alton, Ill., has started work on new brick buildings to be erected on the site of the present plant. It will have twice the capacity of the old one.

The Bush Foundry & Metal Wheel Company, Quincy, Ill., has been organized with a capital stock of $40,000 by Thomas L. Tushaus, Arnold Scott and Alfred Kimlin.

The Plano Metal Mfg. Company, Plano, Ill., has been incorporated with a capital stock of $5000 by J. P. Burke, W. M. Foster and C. A. Darnell.

The Wray Fresh Water Supply Company, Kewanee, Ill., has acquired the machine shop equipment and the Kewanee Brass Foundry Company, the foundry formerly owned by Hedburg Brothers. A new brass furnace is to be installed.

The Wantling factory at Peoria, Ill., has been acquired by the Dooley Brothers, Peoria, and on removal to East Peoria, Ill., will be equipped for manufacturing mining drills, picks and other mining equipment.

A petition has been filed in the office of the clerk of the Circuit Court, Alton, Ill., recently as the preliminary step to protect St. Charles County against overflow of the Mississippi River. Plans submitted include the installation of a cycloidal electrically-driven pump of 30,000 gal. per min. capacity.

The Hall Mfg. Company, Monticello, Iowa, is building an addition to its factory, 30 x 160 ft.

The D. L. Davis Mfg. Company, manufacturer of automobile accessories, will build a factory at Ft. Madison, Iowa.

A. M. Baker, Morris, Minn., will install an electric light plant at Linton, Minn.

Lincoln, Neb., will receive bids until 2 p. m., June 22, for a 500-hp. water-tube boiler with chain grate stoker for the city water plant.

The Skinner Mfg. Company, Omaha, Neb., is building an additional factory building, a duplicate of its first plant.

Edgemont, S. D., has authorized $30,000 of bonds for improving the municipal waterworks system.

Garren & Hine, Muscatine, Iowa, operating a machine shop, will occupy about July 1 a building 60 x 60 ft., now under construction.

The Barry Mfg. Company, Muscatine, Iowa, is building a plant for the manufacture of steel pulleys, to be completed about September 1.

Milwaukee

MILWAUKEE, WIS., June 7, 1915.

General business in Milwaukee is showing gradual improvement and the iron and steel industries here are now operating at about 75 per cent. of capacity, a gain of from 12 to 15 per cent. over last year. Mr. Fetterly, of the Merchants' and Manufacturers' Association of Milwaukee, cites that more than 50 per cent. of the men idle three months ago have returned to their trades; that bank clearings in Milwaukee have lately shown an advance of 9 to 10 per cent., and that collections are now almost normal and better than a year ago. Building operations in Milwaukee in the month of May showed a falling off of $554,907, as compared with the corresponding period a year ago. Many large building projects have been planned but have been delayed.

The Kearney & Trecker Company, Milwaukee, Wis., manufacturer of milling machines, is erecting an addition to its plant, which will give it about 6800 sq. ft. floor space, divided into 50 x 72 ft. for erecting shop, and an office, 40 ft. square. The building will be completed about June 15. The company has recently taken large orders for milling machines for foreign shipment.

The Wisconsin Water, Light & Equipment Company, Waupun, Wis., has opened a new plant to manufacture air injectors, metal forms for concrete buildings, silos and hot-water heating boilers.

The Steel Inner Case Company, Eau Claire, Wis., has been incorporated with a capital stock of $5000 by T. W. Black, Thomas E. Wylie and Henry G. Neher.

News has been received from Ashland, Wis., that the Lake Superior Iron & Chemical Company will resume operations at its plant in that city July 1 after having been closed down since May 6, 1914.

The Badger Welding & Cutting Company has been organized at Green Bay, Wis., by Walter F. Gerald, formerly with the Universal Oxygen Company, Sheboygan, Wis. Quarters have been opened at 127 South Broadway.

Indianapolis

INDIANAPOLIS, IND., June 7, 1915.

The Prest-O-Lite Company, Indianapolis, which has taken over the business and plant of the Pumpelly Battery Company, manufacturer of storage batteries, electric ignition and starting and lighting systems, will develop the electrical part of the industry.

The Art Wares Mfg. Company, Indianapolis, has changed its articles of incorporation to provide for $10,000 capital stock.

The Martinsville Factory Club, Martinsville, Ind., has made a contract with the Special Machinery & Foundry Company, Indianapolis, through its representative, C. G. Chase, by which the company is to build a factory and heating plant at Martinsville.

Hugh Hill, of the Hill Standard Mfg. Company, Anderson, Ind., has bought the factory of Foyer Brothers, manufacturers of baby carriages, Toledo, Ohio.

The Kokomo Spring Company, Kokomo, Ind., has been incorporated with $40,000 capital stock to manufacture steel springs. The directors are A. L. Thalman, J. D. Kennedy and A. B. Armstrong.

The American Molding Machine Company, Terre Haute, Ind., recently incorporated, will have its work done by contract. W. C. Norcross is president and general manager.

The Haynes Automobile Company, Kokomo, Ind., has under way extensive additions to its factory.

Mac's Mfg. Company, Terre Haute, Ind., has been incorporated with a capital stock of $10,000 by P. H. MacNeil, J. F. Weisman and M. N. Thayer. It will make rotary engines.

The American Safe & Lock Company, Anderson, Ind., has been organized by M. G. Reynolds, R. R. Andrews and J. C. Groble to manufacture safes and locks. The company has a capital stock of $25,000.

Detroit

DETROIT, MICH., June 7, 1915.

Buying of tools has been steady this week and the volume of business satisfactory, although no large lists were purchased. Inquiry is holding up well and no sign of an immediate slackening of the present activity is to be found. The call for second-hand machinery is slightly less brisk. Manufacturing machinists report a good volume of orders, not only from the automobile industry, but from other sources. Industrial conditions in the up-state manufacturing centers are improving and reports indicate most factories are preparing for a heavy summer run. Building circles continue active, although the volume of new construction shows a decrease from that of last month.

The Wadsworth Mfg. Company, Detroit, has been incorporated with $250,000 capital stock to manufacture automobile bodies, etc. Frederick E. Wadsworth, Mary M. Wadsworth and Herbert E. Cronenwirth are the incorporators. It has acquired a large factory site in Detroit.

The Shermack Company, Detroit, manufacturer of vending machines, has increased its capital stock from $150,000 to $300,000.

The Brown Metallic Products Company, Detroit, has been incorporated with $10,000 capital stock to manufacture metal specialties. The incorporators are R. Harry Brown, Claytice W. Brown and G. Edwin Chamberlain.

The Detroit Pressed Steel Company, Detroit, manufacturer of automobile parts and sheet metal stampings, will increase the capacity of its plant by the erection of a one-story steel frame addition, 57 x 185 ft. A new office building, 56 x 130 ft., will also be erected. C. H. R. Flinterman is general manager.

The American Agricultural Chemical Company, Detroit, has taken out a building permit covering the erection of a two-story factory to cost about $25,000.

The Hancock Mfg. Company, Charlotte, Mich., is enlarging its plant by the erection of a building 80 x 160 ft. It will be used in part by the machine department and partly for office purposes.

The Briscoe Motor Company, Jackson, Mich., automobile manufacturer, has acquired a tract of land just outside of Jackson as a site for its new plant. The first unit of the new plant to be erected will be a two-story manufacturing building, 250 x 300 ft. Additional buildings will be erected as development may require.

The Independent Motors Company, manufacturer of automobile trucks, Port Huron, Mich., has effected a reorganization. The new officers are A. W. Frantz, president; W. B. Ford, treasurer, and M. H. Rupe, secretary.

The Furgason Mfg. Company, Lansing, Mich., has acquired a new plant and will add the manufacture of automobile accessories to its present line of general machine shop products.

The Bradley & Aukebrandt Company, Muskegon, Mich., has been incorporated with $15,000 capital stock to manufacture plumbers' and steamfitters' supplies. A factory will be erected. James Bradley and Joseph H. Aukebrandt are the principal stockholders.

The Walter Clark Veneer Company, Grand Rapids, Mich., is having plans drawn for a three-story brick factory, 111 x 165 ft., to cost about $25,000. Some additional equipment will be installed later.

The Mt. Pleasant Motor Company, Mt. Pleasant, Mich., automobile manufacturer, is adding to its facilities by the erection of an addition to its factory.

Ahmeek, Mich., has voted to bond for $17,000 for the purpose of installing a water system.

The Republic Truck Company, Alma, Mich., manufacturer of automobile trucks, has secured promises of a new plant to be financed by the Alma board of trade, and will remain in that city. The new factory will cost $35,000.

The Hill Foundry Company, Kalamazoo, Mich., has effected an agreement with its creditors whereby it will continue in business. No change in the management of the company is involved.

The Detroit Valve & Fittings Company, Wyandotte, Mich., is erecting an addition to its plant which will increase its capacity 50 per cent.

The Electric Equipment Company, Lansing, Mich., manufacturer of electrical supplies, has increased its capital stock from $5000 to $20,000.

The Briscoe Motor Company will start the work, about July 1, of building a new factory at Jackson, Mich.

Frederick E. Wadsworth, secretary and treasurer of the Michigan Steel Boat Company, the Detroit Engine Works and the Detroit Motor Car Supply Company, has purchased property in Grand Rapids, Mich., as the site for a new factory. It is understood that the construction of a four-story factory, 240 x 260 ft., will be started at once. The building is to be used by a new company in the manufacture of motor car bodies.

Cleveland

CLEVELAND, OHIO, June 7, 1915.

The demand for machine tools, particularly for lathes, continues heavy, and while the most of the machines are wanted for making war material, a good volume of business is appearing from other sources, especially from the automobile trade. The European and Canadian demand for turret lathes is not as active as it has been. Deliveries are not promised on some types of turret lathes until from September to November. Among the orders placed last week is one from an Ohio maker of war material for 16 machines, the most of these being turret lathes. A great deal of war material is still being figured on by northern Ohio manufacturers, and if this is taken in this territory, the purchase of considerable machinery will be necessitated. Among the recently reported inquiries is one from the French Government for 3,000,000 forged 3-in. high explosive shells for delivery during a year beginning in November. Ohio automobile builders have taken some additional round lot orders for motor trucks for war purposes. The Akron rubber tire industry took two 42-in. boring mills the past week, and has inquiries out for several additional machines. Dealers report a scarcity of power presses in small sizes, this being attributed to the fact that some of the press builders are crowded with orders for large machines for making shrapnel shells. The demand for twist drills has improved and an active call is reported for special drills for making shrapnel. Small malleable castings are in heavy demand, and plants that specialize on this class of work are very busy.

The National Acme Mfg. Company, Cleveland, has completed plans for its plant additions. They will include a six-story brick and steel building, 52 x 218 ft., and a one-story building, 67 x 194 ft.

It is reported that the Portage Rubber Company, Barberton, Ohio, has about closed a deal for the purchase of the plant of the American Strawboard Company, and will erect a rubber plant on the site of the present building.

The Mechanical Mold & Machine Company, Akron, Ohio, will erect a one-story machine shop, 76 x 90 ft.

The Goodyear Tire & Rubber Company, Akron, Ohio, will build a three-story factory, 100 x 125 ft., to increase the capacity of its cord tire department.

The Falls Rubber Company, Cuyahoga Falls, Ohio, has commenced work on a plant addition which will be a structure 80 x 200 ft., three stories and basement. Buildings will also be erected for a power plant and an office. All the machinery will be electrically driven.

The H. G. Burford Company, Fremont, Ohio, has been organized to take over the Lauth-Juergens Motor Truck Company, of that city. At the head of the company is H. G. Burford, president and managing director of the H. G. Burford Company, Ltd., London, England, a prominent motor vehicle company. The other officers are J. W. Worst, vice-president; John M. Sherman, secretary; and R. J. Christy, treasurer. It has been incorporated with a capital stock of $250,000. The plant has a large number of orders on hand for motor trucks, and it is probable that its capacity will be increased.

The Wanecek Strop & Cutlery Company, Fremont, Ohio, has been incorporated with a capital stock of $25,000 by John B. Stahl, and others, to reorganize the business and take over the plant of the Wanecek company that recently went into bankruptcy. It will make cutlery specialties and razor strops.

The Schaffer Engineering & Equipment Company, Tiffin, Ohio, has increased its capital stock from $15,000 to $50,000.

The Sommers Motor Company, Bucyrus, Ohio, will enlarge its plant by the erection of two extensions, one 100 x 300 ft. and the other 35 x 100 ft., both of brick and steel.

The American Steel Tubing Company, Toledo, Ohio, has increased its capital stock from $1000 to $50,000.

The Standard Steel Tube Company, Toledo, Ohio, will build an addition to its plant, 100 x 100 ft., about doubling its capacity. The plant will be equipped with modern tube-making machinery.

The Hill-Cheesman Mfg. Company, Toledo, Ohio, has been formed with a capital stock of $100,000, and has purchased the plant of Foyer Brothers & Co. It will continue the manufacture of the products made by the latter firm, that include baby carriages, go-carts and porch furniture. Hugh Hill, Clayton E. Cheesman and Benedict H. David are interested in the new company.

The recent fire at the Canton Drop Forging & Mfg. Company, Canton, Ohio, did only a trivial damage at one point in the plant.

Cincinnati

CINCINNATI, OHIO, June 7, 1915.

A noticeable decline in the demand for machine tools from abroad is reported by a number of leading firms. A slackening of inquiries is also reported from domestic sources. The reason for this change in conditions is not apparent, and may be merely temporary. Local machine-tool builders, however, are proceeding more cautiously, and are less inclined to accept orders from manufacturers making war munitions, both at home and abroad. In spite of the fact that binding contracts are insisted on, there are reasonable grounds for believing that the abnormal demand for machine tools from Europe will cease as suddenly as it arose, and local firms are guarding closely their home trade. The local contracting machine shops are all very busy, but quite a number in nearby manufacturing centers are said to be reaching out for contracts.

Makers of sheet metal working machinery continue their previously mentioned optimistic reports. Business already in hand with them is sufficient to keep their plants operating at full tilt for several weeks. The foundry situation is unchanged, only the jobbing foundries reported as being busy. A slight improvement is noted in the demand for wood-working machinery.

The Cincinnati Steel Products Company, Arlington Heights, Cincinnati, manufacturer of steel furniture and other sheet metal specialties, contemplates making additions to its equipment. At present the company is in the market for a quantity of small channel and bar iron, as well as for three carloads of Nos. 20 and 22 black sheets.

The Wolff Metal Company, 1811 John street, Cincinnati, will probably construct a new plant on Queen City avenue. No details as to equipment required are yet available.

The Emery Candle Company, Cincinnati, has let contract to D. Meinken for an addition to its plant, 50 x 100 ft., three stories, of brick and steel construction.

The Miami Brass Foundry Company, Dayton, Ohio, has commenced work on an addition to its plant, 40 x 70 ft., one story, of brick construction. Some foundry equipment will be required.

It is reported that the Mumaw-Harbour Company, Carthage, Ohio, will soon move its plant to 711-717 Carr street, Cincinnati, and will double its manufacturing capacity. It makes automobile shields and other sheet metal specialties.

The Columbus Bolt Works Company, Columbus, Ohio, has increased its capital stock from $75,000 to $660,000. It is rumored that extensions to its plant are contemplated.

The Clifton Silver Plating Company, 118 West Main street, Springfield, Ohio, is enlarging its plant. Only a small amount of special equipment will be required.

The Sidney Tool Works Company, Sidney, Ohio, has lately received a large order for milling machines and will probably add to its equipment.

The New Lexington Clay Mfg. Company, Columbus, Ohio, has been incorporated with $75,000 capital stock by Daniel McKeever, and others. A brick plant will be erected.

The Great Eastern Roller Company, Greenville, Ohio, expects to erect a plant for the manufacture of road rollers and farm machinery. H. H. Arnett is manager.

The Central South

LOUISVILLE, KY., June 7, 1915.

Although business is somewhat irregular, machinery manufacturers generally report improved prospects. Most of the shops are working an average of five days a week, which is considered good, in view of conditions. The bulk of the work which is being handled consists of small jobs; but the chances favor some more important business being handled in the near future, as a number of important industrial projects are under discussion in this vicinity. Building operations are expanding, and boiler manufacturers report better prospects for sales of heating equipment. A considerable number of public service plants are being built in this territory, and these offer the best opportunities for business at present.

R. Baylor Hickman and associates have purchased 2955 shares of the Ewald Iron Company, the stock being sold at public auction June 3, following a court order. The purchase confirmed a private sale made some time ago. Mr. Hickman is president of the company, which was established many years ago by the late Louis P. Ewald.

John Bacon Hutchings & Sons, Columbia Building, Louisville, Ky., will receive bids on the $350,000 building of the Louisville Y. W. C. A., June 18. Boilers for a heating plant constitute the principal item of equipment.

The Norman Lumber Company, Ninth and Magnolia streets, Louisville, is considering the purchase of a molding machine.

The Warsaw Electric Light Company, Warsaw, Ky., is making arrangements to build a new powerhouse and construct a street lighting system.

The wood and metal working shop of T. W. Witty & Son, Cerulean, Ky., was burned recently with a loss of $3000.

The Johnson Lumber & Supply Company, Buechel, Ky., is a new purchaser of electrical supplies, having installed motors in its wood-working plant.

The Swift-McNutt Company, Boston, Mass., has purchased the plant of the Indian Refining Company, Georgetown, Ky., and will dismantle it. The plant includes a steam power plant, etc.

The Twentieth Century Metallic Packing Company, Lexington, Ky., has formally incorporated with $25,000 capital stock. E. I. Welch, T. G. Saxon and R. C. Welch are the incorporators.

The Broadhead-Garrett Company, Winchester, Ky., which recently built a sawmill at Nada, Ky., plans to install an electric light plant there.

The Horse Cave Light & Power Company, Horse Cave, Ky., has been incorporated with $10,000 capital stock by J. P. and J. A. Todd, and others. It has taken over the Horse Cave plant and will make improvements.

The John A. Stewart Electric Company, Detroit, Mich., is now reported as the company which is considering installing an electric power plant at Harlan, Ky., to cost $250,000.

The Southern Orchard Company, Knoxville, Tenn., is interested in ice-manufacturing machinery.

The Andres Stone & Marble Company, Milwaukee, Wis., which will build a marble finishing mill at Vestal, Tenn., near Knoxville, will need, among other equipment, a 30-ton traveling crane. The building will have a steel frame.

The Jackson Iron & Bronze Works, Jackson, Tenn., will increase its capital stock to $50,000 and will enter the foundry trade. I. A. Rainey is manager.

The Braemer Power Company, Braemer, Tenn., has been organized with W. P. Dungan, president, and J. H. Graveson, general manager, and will construct a 1000-hp. hydro-electric plant at Braemer Falls.

The John G. Duncan Company, Knoxville, Tenn., will purchase a second-hand 8 x 10 American double-cylinder triple-drum hoisting engine.

Leroy Park, Greeneville, Tenn., will build an aerial tramway to convey iron, manganese and zinc ore to railway six miles distant. Some other type of conveyor may possibly be used.

The Kingsport Sewer Pipe Company, Kingsport, Tenn., has begun the equipment of a plant.

The State Board of Control, Nashville, Tenn., has announced that motor-driven fans will be purchased for a ventilating system to be installed in the state prison at Nashville.

Texas

AUSTIN, TEXAS, June 5, 1915.

An increase in the demand for cotton gin machinery is the chief feature of the machinery trade at this time. While the cotton crop is about three weeks late, it is in good condition and prospects are favorable for a large yield. Much attention is also being given to drainage projects in different parts of the state.

The Silsbee Ice Mfg. Company, Silsbee, will install an electric light plant.

The Dodsonville Gin Company, Dodsonville, will build a cotton gin. J. T. Jones is interested.

The Glazier Mill & Elevator Company, Glazier, has been organized with a capital stock of $15,000 to build a flourmill and grain elevator. J. F. Johnson is in charge.

The Gordon-Mingus Light Company, Gordon, has been organized with a capital stock of $5000 to build an electric light plant.

The El Paso Ice & Refrigerator Company, El Paso, plans to build an addition to its plant to cost $12,500.

The Planters Gin Company, which has a capital stock of $18,000, will build a large cotton gin at Lockhart. J. C. Lipscomb is in charge.

An issue of $75,000 of bonds has been voted by the land owners of the Tempe drainage district of Arizona for the purpose of constructing a drainage system. More than 10,000 acres will be drained and the water thus obtained will be used for irrigating land.

Birmingham

BIRMINGHAM, ALA., June 7, 1915.

For the first time in many months a leading machinery dealer admits that, while business for this season is not up to the standard of 1914, still there has been a marked improvement in the general demand. This is in spite of the slump in the recent activity in the sawmill trade. Pumps and boilers are in good demand, and the feature is inquiry for and sales of electrical appliances. Owing to the enlarged supply of hydroelectric current from the Alabama Power Company, a number of mines are going on an electrical basis, thus creating an electrical supply demand. Slack conditions in foundries and machine shops force the admission that nothing is being done in the machine tool line. One Birmingham dealer, however, who happened to have 13 lathes, has shipped them to the Russian Government.

The Alabama Power Company contemplates extending its hydroelectric transmission lines to Albertville, Boaz and Guntersville, Ala.

The Gulf Brick & Tile Company, Mobile, has been incorporated by J. K. Fox, Fowl River, Ala.; L. L. Duggar, and others, of Mobile, with a capital stock of $50,000.

The Georgia-Alabama Packing Company, Phenix City, Ala., has been incorporated with a capital stock of $60,000 and proposes to establish a packing plant, abattoir, cannery and 60-ton refrigerating plant. The initial capacity will be 20,000 head of beeves and 50,000 head of hogs. James L. Glass is president.

Park A. Dallis Company, Atlanta, has prepared plans for a hydroelectric development at Cherokee Mills, on the Little River, for Joseph M. Brown, Marietta, Ga. A flourmill, gristmill, sawmill, ginnery, etc., are to be built.

The Bremen Machine Works, Bremen, Ga., will enlarge its plant.

J. F. Comer, Louisville, Ga., will increase the hydroelectric power generated on Spring and Dry Creek to develop 75 hp. The Atlantic Engineering Company, Savannah, Ga., is the engineer.

The Atlantic Power & Properties Company is the new name of the former Atlantic Stone Company. The capital has been increased from $30,000 to $60,000. The construction of hydro-electric plants is planned for the company's quarries.

Tocoa, Ga., has voted $35,000 of bonds for a power plant.

Richard F. Hoyt, Boston, Mass., has purchased a 10-acre site at Savannah and plans a factory for the manufacture of cotton seed oil products. The Gallivan Building Company, Greenville, S. C., is the general contractor.

Z. B. Hayslip and C. R. Scott will establish a plant to manufacture concrete blocks at Sarasota, Fla.

Warrenton, N. C., has voted $50,000 in bonds for the installation of waterworks and sewers.

St. Louis

ST. LOUIS, Mo., June 7, 1915.

Machine-tool business shows some improvement in volume. General business reports are all encouraging from the St. Louis territory. They indicate improvement expected when the turn of the summer period arrives. Crop reports are generally satisfactory, while from the cotton area improved sentiment is the rule, now that it is known that as heavy, if not a heavier, movement outward of cotton will take place this year than last. Financially, the situation is very sound and the general feeling is that as soon as the state of mind incident to last fall's paralysis of business disappears, there will be marked activity. Such buying of tools as has been done has been of the single tool character, no large lists appearing. New enterprises are reported forming, but not in definite state yet. Mining in the lead and zinc districts is feverishly active and power, electric and concentrating equipment is in increasing demand. Second-hand tools are in fair request.

The Sabin Specialty Company, St. Louis, Mo., has been incorporated with a capital stock of $50,000 by Chauncey R. and Clayton R. Sabin, and Winifred McHale.

The Union Vulcanizing Company, St. Louis, Mo., has been incorporated with a capital stock of $10,000 by G. S. Brunton, Ferd Warner and M. E. Brunton.

The Birge-Brown Mfg. Company, St. Louis, Mo., Eighth and Mound streets, of which Arthur B. Birge is president, will manufacture handhole cover plates for boilers, etc.

The Buchanan Elevator Company, St. Joseph, Mo., has been incorporated with a capital stock of $250,000 by R. T. Forbes, J. T. Schneider and John E. Dolman.

The Packard Kansas City Motor Company, Kansas City, Mo., has increased its capital stock from $40,000 to $75,000.

The Central Garage, Machine & Supply Company, Kansas City, Mo., has been incorporated with a capital stock of $12,000 by A. Stout, A. H. Lyons and E. J. Short.

The All Steel Motor Company, St. Louis, Mo., has acquired the Blees Buggy Company factory at Macon, Mo., and will manufacture motor cars.

An electric railroad is planned from Jefferson City, Mo., to Keokuk, Iowa, by H. W. Knight and Thomas Peterson, Keokuk, Iowa, who have made considerable progress with the preliminary work. In addition to the electric line, power and light will be served to the towns along the route.

Butler, Mo., will receive bids until June 22 for two oil engines direct-connected to 75-kw. generators, one 100-kw. generator set, two 350-gal. per min. pumps with 20-hp. motor, 150-hp. feed water heater, boiler feed pump, etc. Harper & Stiles, Grand avenue, Temple, Kansas City, Mo., are the engineers in charge.

Ray W. Cropper will equip an electric light and power plant at Keytesville, Mo.

The Mathews Construction Company, Kansas City, Mo., will construct the electric light and power plant at Montrose, Mo. E. T. Archer & Co., New England Life Building, Kansas City, Mo., are the engineers.

The Mitchell Mfg. Company, Kansas City, Mo., has been incorporated with a capital stock of $50,000 by A. R. Mitchell, P. G. Scraggs and E. T. Parker.

A manufacturing and assembling plant will be equipped at Kansas City, Mo., by the American Ladder Company, Momence, Ill.

The Schaefer Wagon Company, Kansas City, Mo., has been incorporated with a capital stock of $15,000 by Fred Schaefer, E. T. Adams, L. V. Burns, and others.

The Dixie Cotton Oil Company, Little Rock, Ark., has been incorporated with a capital stock of $100,000 by H. S. Hayley, J. B. Hildebrand and E. B. Webber.

The Arkansas Light & Power Company, Arkadelphia, Ark., has acquired the public service plant at Eldorado, Ark., and will improve it.

The R. C. Staples Chemical Company, Ft. Smith, Ark., has been incorporated with a capital stock of $50,000 by R. C. Staples, D. C. Goff, J. S. Harper and Geo. F. Youmans.

Charles E. Bramble, Texarkana, Ark., has been granted a franchise for a waterworks.

Adamson, Okla., will receive bids until September 20 for an electric light plant. Frank Mann is engineer.

George F. Blethen, Kingston, Okla., has been granted a franchise for a public service plant and will install equipment, including one 37½-kw. alternating-current generator and one 50-hp. oil engine.

The Muskogee Oil Refining Company, Muskogee, Okla., has appropriated $100,000 for plant improvement, including filtration apparatus. Its plant capacity will be doubled.

An oil refinery with a daily capacity of 1000 bbl. of oil will be equipped at Pemeta, Okla. (P. O. at Jennings, Okla.), by Charles F. Colcord, Oklahoma City; E. A. Hawley, Cushing, Okla., and L. F. Parker, St. Louis.

The Black Grain Company, Hollister, Okla., will equip a grain elevator at Chattanooga, Okla., with a capacity of 25,000 bu.

The elevator of C. Y. Semple, Oklahoma City, Okla., which has been burned with a loss of $125,000, will be rebuilt. New machinery is being sought.

The Planters Oil Mill & Gin Company, Kosciusko, Miss., is in the market for equipment for a 25-ton ice plant.

The Universal Mfg. Company, Aberdeen, Miss., has plans for increasing its plant capacity and is in the market for machinery. J. B. Young is president.

The Oil States Lumber Company, Shreveport, La., has been incorporated with a capital stock of $30,000 by H. R. Ratcliffe, L. Elfant, J. E. Kennedy and M. J. Dooley.

The Cotton Queen Oil Company, Shreveport, La., has been incorporated with a capital stock of $400,000 by S. F. and M. A. Wiles and H. R. Ratcliffe, and will equip an oil manufacturing plant.

San Francisco

SAN FRANCISCO, CAL., June 1, 1915.

As an indirect result of the war inquiries for lathes for shipment to the East out of stock have lately been received by local merchants. The demand, however, is only for certain sizes, and the amount of business has not been great, although in this particular line stocks are now closely cleaned up, with no deliveries promised for about eight months. Local demand for metal-working tools continues rather slow, coming mainly from garages and other small shops. A good deal of figuring is being done, but buyers are slow to close. A slight improvement is noted in woodworking machinery and contractors' equipment; but these lines are still below normal. The strong demand continues for implements and many kinds of machinery for the preparation of food products; plans are developing for numerous rice and cereal mills, fruit-packing houses, creameries, etc., and the general outlook in the country is encouraging.

The Pacific Gas & Electric Company's improvement plans for the near future include the installation of three 500-kw. transformers at the station of the Pacific Coast Steel Company, South San Francisco; a new impulse wheel at the Drum powerhouse; and the installation of two 822-hp. boilers and superheaters at Station A, San Francisco.

The Byron Jackson Iron Works is adding a three-story pattern shop to its plant at Berkeley, Cal.

The plant of the Bean Spray Pump Company, San Jose, Cal., was damaged by fire May 28. The loss to buildings, stock and equipment is estimated at about $125,000.

It is announced that the Santa Fe Railway will make improvements at Albuquerque, N. M., and vicinity, including an 800-ton mechanical coaling station, two locomotive cranes, and a number of bridges.

Redlands, Cal., has placed a contract with the Layne-Bowler Company for two turbine pumps.

The Utah Glass Company is building a plant to cost $65,000. W. H. Lepper, 206 Brooks Arcade, Salt Lake City, is the architect. It will be ready soon to receive proposals for its furnace and other equipment.

The Pacific Northwest

SEATTLE, WASH., June 1, 1915.

Machinery business continues slightly better than heretofore, with a number of orders placed recently for equipment needed in the Government railroad work in Alaska. The purchasing agent of the Alaska Railroad Commission is now receiving bids for a quantity of steel rails, angle irons bolts and spikes. Of much interest to the Northwest lumber industry is the order for more than 6,000,000 ft. of timber placed recently by the Chicago & Northwestern Railroad, to be used in the construction of 2000 freight cars, with steel underframes. The contract for the cars was placed with a Pittsburgh maker, with instructions to purchase all lumber from North Pacific coast manufacturers, and mills in this section are busy with the order. The Seattle ports remain congested with freight shipments bound for the Orient, for which no tonnage is obtainable. Several new boats were enlisted recently, which serves to slightly ease the situation.

Contract for the construction of two four-masted schooners for the Charles R. McCormick Lumber Company, St. Helens, Ore., has been awarded to the St. Helens Shipbuilding Company, of that city. Vessels will be each 265 ft. long, fully equipped with 600-hp. gasoline engine, etc.

The Independent Lumber Company, Fairbanks, Alaska, of which Roy Rutherford is manager, announces that as soon as conditions warrant a sawmill of 12,000 ft. daily capacity will be located in the Tolvona district.

Feix & Co., Vancouver, B. C., manufacturers of ventilating, sawdust and shavings collecting systems, etc., will open a branch factory within 30 days in Tacoma, Wash.

P. Wilson, Tenino, Wash., has taken over entire control of the Pauline Lumber Mill, near Tenino, and has also acquired a tract of 90,000,000 ft. of timber. It is reported that he plans extensive operations, to begin immediately.

The Stephens Orchard Company, of Nampa, Idaho, has made arrangements with O. G. F. Markhus, receiver for the Idaho Railway, Light & Power Company, to extend electric line to its orchards, and to install power sufficient to pump 7000 gal. of water daily.

The Bremerton Machine Works, Bremerton, Wash., has been incorporated by F. W. Moore, A. Stebick, W. O. Bullette, and M. Bullette, with a capital stock of $6000.

The Franklin Tool Works, Seattle, has increased its capital stock of $25,000. It is understood the funds will be used in making improvement to its shops and installing equipment.

The Bellingham Welding Company, 1312 Railroad avenue, Bellingham, Wash., has recently opened a shop. It will be managed by G. H. Allison and Morris Swanson.

The burned plant of the Bellingham Shingle Company, Lake Smaish road, Bellingham, Wash., will be rebuilt with a capacity of 40,000 shingles per day.

The plant of the Alaska Lumber & Box Company, Hadley, Alaska, was completely burned out in a recent fire. It supplied all the cases for canneries and fishermen in that section.

The plant of the Idaho Pine Lumber Company, Dishman, Wash., has been leased by Clarence Watts and George U. Armstrong, Spokane, who will operate it as the Golden Rule Box Factory. They will overhaul it and install new machinery.

It is authentically reported that negotiations are now pending for purchase from Sheel & McArthur, Tenino, Wash., of five acres of ground which will be used by German interests for the erection of a chemical plant, to manufacture aniline dyes, etc., using lignite coal. The first unit will be a temporary plant; but if successful a permanent plant will be erected which is stated will cost $350,000.

Canada

TORONTO, ONT., June 7, 1915.

Manufacturers in Canada engaged in the production of munitions of war are facing a scarcity of skilled labor. This condition promises to become more extensive as time goes on, for not only is the number of factories making shells increasing, but two commissioners from Great Britain are in this country picking up all the mechanics they can lay their hands upon. They have so far secured several hundred. One manufacturer was recently compelled to turn down an order for 500,000 shells from the French Government because of inability to secure the necessary quota of labor to guarantee delivery in the time specified.

Reports on the street in both Montreal and Toronto, to the effect that further important orders for war materials are to be placed in Canada by the Russian Government, amounting, it is said, to $50,000,000, are being connected with the Nova Scotia Steel Company.

The Dominion Wheel & Foundry Company, Eastern avenue, Toronto, Ont., will make additions to its plant to cost $7500. The addition will be used exclusively for the manufacture of high explosives.

The St. Thomas Steel Grave Vault Company, St. Thomas, Ont., will install special machinery in its plant for the manufacture of shrapnel shells. F. S. Ferguson is in charge of the undertaking.

The National Hardware Company, Orillia, Ont., has received a contract for the manufacture of 20,000 shrapnel shells for the Dominion Government. Special machinery will be installed in its plant.

Robertson Brothers, Toronto, Ont., is in the market for 2-hp. and 3-hp. 250-volt direct current motors.

E. S. Hatch, St. Thomas, Ont., will commence the construction of a planing-mill to cost $5000.

The Department of Naval Service, Ottawa, Ont., will receive bids until July 1 for a 30-ton steam wharf crane of the derricking jib type for the Halifax dock.

Henry Bartholomew is rebuilding his sawmill at Vanessa, Ont., which was destroyed by fire.

The Chapman Double Ball Bearing Company, Toronto, Ont., will build an addition to its factory for the manufacture of high explosives, at a cost of $5500.

The Pembroke Sash & Door Company's factory at Pembroke, Ont., was destroyed by fire with a loss of $75,000.

Fire damaged the cheesebox factory of J. E. Playfair, Fallbroke, Ont. About $2000 worth of machinery was destroyed.

S. H. Kent, city clerk, Hamilton, Ont., will receive tenders for a 10-ton traveling crane and equipment.

The United Incandescent Light Company, Ltd., Peterborough, Ont., has been incorporated with a capital stock of $40,000 to manufacture electric and other lighting appliances, etc. The provisional directors are George M. Willoughby, 27 Willcocks street, Toronto; James H. Fraser, F. H. Hurley, and others, of Toronto.

The Formosa Electric Light Company, Formosa, Ont., has been incorporated with a capital stock of $3200 to erect a plant to generate power, electricity, etc. The incorporators are P. F. McCue, Frank A. Heisz, A. Opperman, and others.

The Georgetown Foundry & Machinery Company, Ltd., Georgetown, Ont., has been incorporated with a capital

stock of $40,000 to manufacture knitting machines, iron, steel and all foundry products. The directors are John A. Willoughby, Charles Young, John A. Rush and others.

The National Iron Works, Ltd., Vancouver, B. C., has been incorporated with a capital stock of $25,000 to operate foundries and manufacture iron, steel, etc.

The Miller Rubber Company of Canada, Ltd., Toronto, Ont., with a capital stock of $50,000, has been incorporated to manufacture automobile tires, etc., by James Miller, John Karn, Michael Montag and others.

The Buckeye Tire Company of Canada, Ltd., Toronto, Ont., with a capital stock of $150,000 has been incorporated to manufacture motors, tires, accessories, etc. The provisional directors are Normain A. Craig, 1255 Queen street, West, Toronto; Charles H. Blaxill, 614 Church street; Fred C. Noise and others.

The Ontario Ammunition Company, Ltd., Toronto, Ont., with a capital stock of $500,000 has been incorporated to manufacture ammunition, shells, etc. The provisional directors are John A. Donovan, 60 Browning avenue, Toronto; James Aitchison, 6 Thornburn avenue; Archibald T. Struthers, 68 Charles street, West, Toronto, and others.

The Automobile Signal System Company, Ltd., Toronto, Ont., has been incorporated with a capital stock of $100,000 to manufacture automobile signals, horns, speedometers, etc. The incorporators are Thomas R. J Wray, 751 Dovercourt road, Toronto; Thomas Lines, 93 Westmorland avenue, Toronto; William J. Miller and others.

The Cobourg Steel Company, Ltd., Toronto, Ont., has been incorporated with a capital stock of $40,000 to manufacture articles from iron, steel, etc. The provisional directors are Robert D. Hume, 54 Roxborough drive, Toronto; William J. Elliott, 57 Walmer road; Joseph J. Greenan, 33 Norton avenue, Toronto, and others.

The Cluff Ammunition Company, Ltd., Toronto, Ont., has been incorporated with a capital stock of $100,000 to manufacture ammunition, shells, etc. The incorporators are Arthur W. Holmsted, 65 Beaty avenue, Toronto; Arthur B. Mortimer, Henry C. Draper and others.

J. B. R. Bond, town clerk, Bassano, Alta., will receive bids until June 19 for the supply of one 750-gal. turbine waterworks pump.

A cold storage and pork packing plant will be erected at Estevan, Sask., to cost $20,000. A. Harris, Clarendon Hotel, is in the company.

The Western Terminal Elevator Company, will erect a reinforced concrete elevator adjacent to its present one at Fort William, Ont., to cost $100,000.

Rodrigue Deschambault's sawmill at St. Jerome, Que., which was totally destroyed by fire, will be rebuilt.

The sawmill of W. K. Baldwin, Baldwin Mills, Barnston Township, Que., which was destroyed by fire, will be rebuilt.

Kingston, Ont., will call for tenders for a 300-kw. alternating current generator. W. W. Sands is clerk.

Hull, Que., will spend $100,000 on extensions to its waterworks system. J. A. Laforest is engineer.

The Canadian Consolidated Rubber Company, 5 Breithaupt street, Berlin, Ont., is in the market for new machinery.

The Water Commission, Windsor, Ont., will call for tenders shortly for a 160-hp. boiler equipment. W. A. Hanrahan is secretary of the commission.

A. M. Bowman, Box 86, Elmira, Ont., is in the market for rotary pumps and steam specialties, etc.

The Colonial Brick & Stone Company, Ltd., Amherst, N. S., has been organized with a capital stock of $100,000 to manufacture brick at Wallace Bridge, N. S. George T. Douglas is president. The estimated output of the company is 4,000,000 bricks a year.

The Canadian Laundry Machinery Company, Ltd., Toronto, has been incorporated with a capital stock of $150,000 to manufacture laundry machinery and supplies. Frank A. Gaul and Bidwell N. Davis, Toronto; Robert M. Burton, Cincinnati, Ohio; Eugene F. Underhill, Glendora, Cal., and Adam Kreuter, Chicago, are the incorporators.

The plant of the Beury Film Company Windermere avenue, Swansea, Toronto, was destroyed by fire May 31 with a loss of $100,000, including $8000 worth of machinery. James Beury, Philadelphia, Pa., is principal owner.

The United Specialties Mfg. Company, Ltd., Montreal, has been incorporated with a capital stock of $50,000 by Andrew E. Martin, Leon Daoust, Alexander G. F. Ross and Harry Woodcock, all of Montreal.

The City Council, Montreal, has appropriated $19,000 for a pump at the Papineau avenue station.

The Luitweiler Pump Company, Dundas, Ont., has plant enlargements under way which will require additional equipment for the manufacture of pumps.

The D. J. Barber Foundry Company, Brighton, Ont., of which L. D. Ross is manager, is having plans prepared for an addition to its foundry.

The Granite Concrete Block Company, Ltd., Toronto, has been incorporated with a capital stock of $40,000 to manufacture cement blocks, etc. James A. Livingston and Robert Robinson, Toronto, and John A. McDonald, Pembroke, Ont., are the directors.

The capital stock of the Gauanoque Electric Light & Water Supply Company, Ltd., Gauanoque, Ont., has been increased from $40,000 to $100,000. The company is to extend its distribution of electric power.

Government Purchases

WASHINGTON, D. C., June 7, 1915.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until June 22: Schedule 8401, for one electric pump for Philadelphia; schedule 8402, for four automatic screw machines for Newport; schedule 8403, for two induction motors, and schedule 8404, for two centrifugal volume exhausters, all for Washington, D. C.; schedule 8405, for one acetylene pressure generator for Norfolk; schedule 8407, for one patternmakers' grinder, six screw cutting engine lathes, two automatic screw machines, one plain grinding machine and one rotary splitting shear, all for Brooklyn; schedule 8408, one rivet heading machine for Mare Island schedule 8410, one universal forging machine for Norfolk; schedule 8435, for eight overhead trolley hoists for Newport.

Bids were received by the Bureau of Supplies and Accounts, Navy Department, Washington, June 1, for supplies for the navy yards, as follows:

Schedule 8277, Supplies and Accounts

Class 81, Washington—Cold saw cutting-off machines—Bid 184, units; 195, units; 198, units; 203, $225 and $2450.

Schedule 8278, Ordnance

Class 91, Newport—Four turret lathes and two turret threading attachments—Bid 140, $5254 and $6454; 226, $6790.

Class 92, Newport—Four automatic machines—Bid 200, units.

Class 93, Newport—Two hand and power feed milling machines—Bid 27, $369.50; 97, $315; 102, $345; 104, $330; 121, $350; 154, $335; 184, $415; 198, $494.

Class 94, Newport—One ball race grinding machine—Bid 226, $662.

Class 95, Newport—One hole and faced chuck grinder—Bid 27, $1314.50; 30, $850, informal; 226, $1555.

Class 96, Newport—One plain cylindrical grinding machine—Bid 27, $2490; 95, $1852; 189, $2015 and $1915; 226, $1955.

Class 97, Newport—One electric riveting machine—Bid 192, $605.25; 277, $90.

Class 98, Newport—Four 2-spindle sensitive drill presses—Bid 104, $117; 154, $125; 198, $130; 221, $137.

Class 99, Newport—Three portable electrical tool post grinders—Bid 62, $36; 74, $28.90; 102, $77.25; 123, $35.70; 255, $39; 280, $30.

Class 100, Newport—Two turret lathes—Bid 226, $2189 and $2197.

Class 101, Newport—Two universal milling machines—Bid 27, $1123; 97, $1093; 102, $1050; 121, $1100; 189, $1200; 198, $1187; 226, $1376.

Class 102, Newport—Four engine lathes—Bid 184, $805 and $935.

Schedule 8279, Construction and Repair

Class 111, Norfolk—One machine, bolt heading and forging—Bid 21, $2205; 184, $2025; 189, $1815, $1795 and $1760.

The names of the bidders and the numbers under which they are designated in the above list are as follows:

Bid 27, Brown & Sharpe Mfg. Company; 62, Chicago Pneumatic Tool Company; 74, Cincinnati Electrical Tool Company; 95, Walter H. Foster Company; 97, Frevert Machinery Company; 102, Fairbanks Company; 104, E. L. Fraser; 121, Hill, Clark & Co.; 123, Hisey-Wolf Machine Company; 140, Jones & Lamson Machine Company; 154, Kemp Machinery Company; 184, Manning, Maxwell & Moore; 189, D. Nast Machinery Company; 192, Nazel Engineering & Machine Works; 195, Newton Machine Tool Works; 198, Niles-Bement-Pond Company; 200, National Acme Mfg. Company; 203, Nutter & Barnes Company; 221, Pratt & Whitney Company; 226, Prentiss Tool & Supply Company; 255, Stow Mfg. Company; 277, Toledo Electric Welder Company; 280, United States Electrical Tool Company.

Trade Publications

Foundry Equipment.—Turner Machine Company, 3632 North Lawrence street, Philadelphia, Pa. Catalogue. Mentions a line of foundry equipment which includes molding machines for hand or belt operation, sprue or gate cutters and sand sifting and mixing machines. Illustrations of all of the machines are presented together with concise descriptions covering the essential points and condensed specification tables. An automatic machine for grinding the plugs or keys for brass and iron cocks is described and a double head key lathe for turning these parts up to a maximum diameter of 2 in. and a length of 9 in. are illustrated and described.

Sand Handling and Mixing Machinery.—Standard Sand & Machine Company, Cleveland, Ohio. Catalogue No. 6. Concerned with a line of sand handling machinery for foundries. After a brief discussion of the factors entering into the production of good cores and the treatment of sand, the various machines are illustrated and described. These include mixing machines, a mixing, rolling and bonding machine, pulverizers and conveyors. Brief descriptions of the different machines are given under the illustrations and a partial list of users is included.

Grinding Machines.—Wilmarth & Morman Company, Grand Rapids, Mich. Collection of circulars and catalogue No. 103. The circulars describe a number of different types of grinding machines, including both the universal and surface styles. In addition to an illustration of the machine itself and condensed specification tables, the text matter descriptive of the machines is supplemented by line and half-tone engravings of the various parts. Catalogue No. 103 gives illustrations of a number of different types of drill grinding machines. Views of the machines in use together with condensed specification tables and instructions for grinding other tools such as milling cutters, hobs, gear cutters and taps and reamers are presented. Brief mention is also made of other types of grinding machines.

Internal Grinding Machine and Thread Tool.—Rivett Lathe & Grinder Company, Brighton, Boston, Mass. Bulletins Nos. 34 and 35. The first relates to an internal grinding machine for the rapid production of small accurate holes. The machine is described at some length with views of both sides of the machine and the automatic reciprocating mechanism that is provided for the table. For convenience the various parts of the machine are numbered both in the engravings of the machine and the text description. The second bulletin deals with a patent thread tool which operates in the same way as the teeth of a die would if applied to the work separately and successively. The special feature of this tool is that it can be used in an ordinary engine lathe by an operator who is not necessarily skilled in the art of cutting threads. The construction and use of the tool is gone into at some length and the text is supplemented by illustrations of the tool in use, the cutters and a series of engravings showing the development of a V-thread.

Factory Construction.—H. Edsil Barr, 907 Palace Bldg., Erie, Pa. Pamphlet. Treats of a system of construction for factories, warehouses and general industrial or commercial buildings. This system makes use of a concrete foundation with a structural steel framework, the sides of the building being largely glass in solid steel sash, while the outer steel columns are inclosed in brick pilasters. The various features of this system are described at some length and views of buildings constructed in this way are included. An illustrated description of this system of factory construction appeared in *The Iron Age*, April 22, 1915.

Gray-Iron Castings.—S. Cheney & Son, Manlius, N. Y. Catalogue. Shows a number of different types of gray-iron hardware and stove castings. The catalogue, which consists of 39 pages measuring 6 x 8½ in., is given over almost entirely to illustrations of the castings with brief tables of the sizes in which they can be furnished where more than one size is made.

Portable Steel Buildings.—C. D. Pruden Company, Station C, Baltimore, Md. Catalogue. Contains illustrations and brief descriptions of a line of portable steel buildings for bunkhouses, contractors' offices, barns, storage houses for oil, paints and volatile explosive liquids, garages, etc. Numerous illustrations of the buildings, which are of galvanized corrugated steel sheets with galvanized steel studding and rafters, are included.

Air Compressors and Stoping Drills.—Sullivan Machinery Company, 112 South Michigan avenue, Chicago, Ill. Bulletin No. 66-G and booklet No. 115. The first calls attention to a line of air-feed stoping drills which are intended for use where the holes point upward and the cuttings run out by gravity. Solid drill steel is used and the drills are made in three types for hard, general and light service. All three types are described at length with a number of illustrations of them in use. The booklet refers to a line of air compressors and is designed to give at a glance the styles and capacities of air compressors built by this company. No attempt is made at description and what details are given are merely the principal dimensions and power requirements. The numbers of the bulletins in which these compressors are described at length are given under the engravings.

Air Compressors and Pumping Equipment.—John H. McGowan Company, Cincinnati, Ohio. Five catalogues. Catalogue No. 39 is devoted to a line of single and duplex, steam motor and belt driven, one and two stage air compressors and air receivers. The construction is described and all parts shown in detail. No. 41 takes up the Ohio triplex pumps for general and factory service, showing 10 types of drives and giving complete descriptions and illustrations. No. 42 is concerned with four types of horizontal and vertical centrifugal pumps; belt-driven, direct-connected motor, self-contained steam engine-driven and self-contained gas engine driven. No. 47 takes up duplex boiler feed and tank pumps. The last catalogue, No. 48, deals with single and duplex power pumps, belt-driven or direct-connected, of the deep well power head type.

Waterproofing Cement.—Smooth-On Mfg. Company, 570 Communipaw avenue, Jersey City, N. J. Pamphlet No. 4. Shows some examples of the use of the company's iron cement No. 7 in combination with Portland cement for permanently waterproofing all classes of brick and concrete construction. It can also be used for gasoline and oil proofing brick and concrete work and for dust proofing and hardening concrete.

Shaping Machines.—Cincinnati Shaper Company, Elam street and Garrard avenue, Cincinnati, Ohio. Catalogues G and H. The first contains illustrations and brief descriptions of a line of pillar shaping machines of the single and back geared type. The various attachments that can be supplied, such as power feed to the head, concave attachment, turret and cross rail heads, revolving and tilting tables, cone arbors, driving rod planing attachment, keyseating attachment and vises are all illustrated and described and mention is made of the special 32-in. machine designed for roundhouse work. Diagrams of the various arrangements of motor drive are included. The other catalogue describes and illustrates various shaping and crank planing machines. In this catalogue descriptions of the various types of machines are presented, followed by illustrations of the different sizes that can be supplied of each.

Hack Saw Machine.—Myers Machine Tool Company, Columbia, Pa. Circular. Illustrates a geared hack saw machine in which the main slide bearing carrying the saw frame is designed to remain in alignment and be adjusted for wear readily. The pins which hold and guide the saw blade are made from square steel which keep the blade true at all times. Mention is made of an adjustable stop for preventing the saw blade from cutting entirely through the work if desired. A brief description of the construction of the machine and a condensed table of specifications are included.

Concrete Handling Machinery.—Lansing Company, Lansing, Mich. Catalogue No. 12. Pertains to a line of concrete working machinery that includes mixers of various sizes and styles, hoists, wheelbarrows, etc. The mixers, which are of the batch and continuous types, occupy the greater portion of the catalogue and are described at some length, illustrations not only of the mixers themselves but of their various parts being presented to supplement the text matter.

Machine Molded Gearing.—National Gear Wheel Foundry, South avenue and Walker street, N. S., Pittsburgh, Pa. Catalogue. Illustrates the various types of bevel, spur, internal, worm, angle and mitre gears that can be supplied. Tables giving the horsepower that can be transmitted by a certain pitch for various kinds of gears are given, as well as a table of standard faces. Tables of standard pitches for different numbers of teeth from 10 to 200 are included.

Motor Starting Rheostats.—General Electric Company, Schenectady, N. Y. Bulletin No. 48,303. Devoted to hand-operated starting rheostats and panels for direct-current motors. The panels are designed for use with motors ranging from ⅛ to 500 hp. and operating on 115, 230 and 550 volt direct-current circuits. Illustrations of the various types of rheostats are presented with illustrations showing the method of mounting and supporting the resistance units. Complete dimension tables for the various kinds of panels are included.

Interior Illumination.—National X-Ray Reflector Company, 235 West Jackson boulevard, Chicago, Ill. Collection of views of various kinds of interiors, illuminated with the company's reflectors. These include stores, office buildings and auditoriums. The special advantage claimed for this system of illumination is a close approach to natural daylight.

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